IMPOSTOR PHENOMENON: A MULTI-METHOD EXAMINATION OF CONSTRUCT VALIDITY AMONG BLACK COLLEGE STUDENTS

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ABSTRACT

Donte LeShon Bernard: Impostor Phenomenon: A Multi-Method Examination of Construct Validity Among Black College Students
(Under the direction of Enrique Neblett)

The impostor phenomenon (IP), or negative self-perceptions of intellectual incompetence (Clance & Imes, 1978), reflects a maladaptive set of cognitions that has been established to significantly detract from positive psychological adjustment among Black emerging adults (Bernard, Lige, Willis, Sosoo, & Neblett, 2017). Despite this research, no attempts have been made to assess the construct validity of measures of IP within the Black community. For this reason, the purpose of this project was to investigate the construct validity of the Clance Impostor Scale (CIPS; Clance, 1985)— considered by many to be the gold standard measure of IP—among Black emerging adults. I utilized a multi-method design to investigate construct validity using three studies that: a) examined the factorial and discriminant validity of the CIPS (N = 261); b) investigated the longitudinal invariance of the CIPS (N = 157); and c) elucidated the extent to which qualitative interviews relating to IP align with or diverge from the traditional theoretical conceptualization of this construct (N = 8). Study 1 found that none of the four empirical model structures previously identified within the literature generalized to the current sample. However, a novel factor structure was discovered within analyses and was found to evidence strong discriminant validity from conceptually similar constructs (e.g., self-esteem, locus of control, achievement motivation). Study 2 investigated the longitudinal stability of this novel factor structure and found that it did not remain

invariant over time (nor did any of the empirical model structures), thus challenging assertions that the CIPS is a stable indicator of IP. Finally, while student interviews in Study 3 did lend credence to certain aspects of IP as theoretically conceptualized (e.g., discounting success, external attributions of achievement), additional information challenges previous work, suggesting that experiences related to one's minoritized status (i.e., negative stereotypes, isolation, nonrepresentation) may play a primary role in shaping cognitions of IP. The collective results of this project both challenge and support various components of construct validity of the CIPS and subsequently shed light on the strengths and limitations of this scale as an accurate and valid measure of IP among Black emerging adults. Implications, strengths, and limitations of the current study are discussed, and areas of future research for refining and extending our understanding and measurement of IP among Black college students are presented.

Keywords: impostor phenomenon, construct validity, multi-method, African American

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Bi-EFA	Bi-factor exploratory factor analysis
Bi-CFA	Bi-factor confirmatory factor analysis
CFA	Confirmatory factor analysis
CIPS	Clance impostor scale
COM	Concerns over mistakes
FNE	Fear of negative evaluation
HBCU	Historically Black college university
IP	Impostor phenomenon
LOC	Locus of control
MTA	Motivations to achieve
MTF	Motivations to avoid failure
PWI	Predominately White institution
PS	Personal standards
MSS	Minority status stress
SES	Socioeconomic status

CHAPTER 1: INTRODUCTION

Despite the steadily increasing rates of enrollment among Black students within higher education, significant disparities remain in the number of Black students who are granted degrees among postsecondary institutions. In examining data from students who entered college in 2010, the National Student Clearinghouse Research Center found that within a six-year period, only 38% of Black students completed their degree compared to 62% of their White counterparts (Shapiro et al., 2017). Several factors may contribute to this disparity, as Black students are expected to negotiate a host of academic, social, and race-related stressors within collegial contexts in which they are often underrepresented (Greer & Brown, 2011; Neville, Heppner, Ji, & Thye, 2004). As articulated by Ford and Harris (1995) "…minority students are fighting a number of uphill battles" (p.198), which together can have significant negative implications for their developmental, psychological, and vocational trajectories.

One negative outcome that may stem from navigating such stressors is the impostor phenomenon (Clance & Imes, 1978; IP), or the internalization of inaccurate self-perceptions and cognitions of intellectual incompetence or "phoniness". Bourgeoning literature suggests that feelings of IP are psychologically damaging among Black college students (Austin, Clark, Ross, & Taylor, 2009; Bernard, Lige, Willis, Sosoo, & Neblett, 2017; McClain et al., 2016). More specifically, among Black college students, IP has been associated with increases in depressive symptoms (Austin et al., 2009), anxiety (Cokley et al., 2017) interpersonal sensitivity (Bernard et al., 2017), and psychological distress (Peteet, Brown, Lige, & Lanaway, 2015).

Although originally conceptualized to capture feelings of high achieving White women (Clance, Dingman, Reviere, & Stober, 1995; Clance & O'Toole, 1987), recent research posits that identifying as a racial minority may serve as a "double shot" to feelings of intellectual incompetence (Peteet, Montgomery, & Weekes, 2015). That is, Black students may be more vulnerable to IP given that they must simultaneously navigate race-related stressors (e.g., culturally insensitive instructors, negative stereotypes, discrimination; Austin et al., 2009; Cokley et al., 2013; Franklin-Jackson & Carter, 2007; Utsey, Chae, Brown, & Kelly, 2002; Wei et al., 2010) and general academic related stress (e.g., academic stress, social stress; Arnett & Brody, 2008; Cokley et al., 2013). In support of this increased vulnerability, there is mounting evidence to suggest that feelings of IP among Black college students may be influenced by academic (e.g., academic survivor's guilt) and race-related stressors (e.g., racial discrimination; (Austin et al., 2009; Cokley et al., 2013), significantly more so than that of peers from other racial groups (Cokley et al., 2017). In light of this compelling research, it is clear that IP represents an important construct to consider in the context of Black student well-being.

Despite the negative psychological implications of IP among Black emerging adults, few studies have taken steps to evaluate the validity of measurement tools utilized to capture cognitions of intellectual incompetence among non-White samples. Rather, the majority of literature examining IP within Black samples has utilized measures created, normed, and validated to highlight the experiences of high achieving middle-and-upper class White women. This is particularly relevant for the Clance Impostor Scale (CIPS; Clance, 1985), which represents the most popular scale used within impostor literature. Although this scale is considered by many to be the current gold standard of IP measurement (Chrisman, Pieper, Clance, Holland, & Glickauf-Hughes, 1995; Cozzarelli & Major, 1990), recent psychometric and

scale validation studies have produced inconsistent results related to its validity at both the item and factor level (Simon & Choi, 2017). As such, some scholars have begun to question its utility and validity (see Leary, Patton, Orlando, & Wagoner Funk, 2000). In addition to psychometric concerns, recent scholarship has posited that the CIPS may not fully capture the IP among Black students (Bernard, Hoggard, & Neblett, 2018; Ewing, Richardson, James-Myers, & Russell, 1996). In light of these critiques, it is surprising that extant work has yet to investigate the construct validity of the CIPS within Black samples. Such an oversight represents a significant gap in the literature that can have notable implications for the ways in which scholars conceptualize, measure, and ultimately approach addressing cognitions of IP among Black emerging adults.

The Present Study

In order to address the aforementioned gap, the current project utilized a multi-study design to investigate the construct validity of the CIPS among Black college students. More specifically, construct validity of the CIPS was investigated through three separate, yet interrelated studies that: a) examined the factorial and divergent validity of the CIPS; b) investigated the longitudinal invariance of the CIPS; and c) elucidated the extent to which student narratives of IP align or diverge from the traditional theoretical conceptualization of IP. In line with scholarship calling attention to the shortcomings of the current conceptualization of IP (Leary et al., 2000; McElwee & Yurak, 2007), this study will be among the first to contextualize IP within the lived experiences of Black students.

Making the Case for a Multi-Method Design

One major limitation of extant literature is the overwhelming utilization of quantitative techniques to investigate IP, particularly within predominantly White samples. On the one hand, more quantitative and close ended questions have served as the cornerstone in developing a

foundational understanding of IP. On the other hand, it is difficult to ascertain *how* Black students experience and make sense of cognitions of IP without incorporating their narratives into this process. Therefore, a more holistic approach, capitalizing on the strengths of both quantitative (e.g., survey data) and qualitative (e.g., interview data) methodologies is warranted to illuminate the construct validity of IP among Black emerging adults. The collection of quantitative survey data would facilitate the evaluation of the construct validity of current measurement tools using traditional statistical indicators (e.g., factorial validity, discriminant validity, measurement invariance). Further, the collection of qualitative data would provide much needed insight into how Black students discuss IP in the context of their own personal experiences. The inclusion of student narratives represents an important component of this study, as it would provide an opportunity for Black students to discuss IP in their own words—something seldom done within IP literature.

Leveraging the collective results from these complementary quantitative and qualitative approaches opens the door to a host of exciting possibilities that would not be possible using one technique alone. For example, we may find that Black students' endorsements and discussions of IP align and mirror that of work done within predominately White samples, adding support to the current conceptualization and validity of measurement tools. Conversely, contextualizing IP within Black student narratives may reveal different markers of IP not yet considered in the literature, thus challenging its current conceptualization. Alternatively, it may be that there is heterogeneity in IP cognitions and the items within current measures highlight only some of the experiences of IP articulated by Black students. Taken together, a multi-method approach represents a novel and promising approach to elucidate the construct validity of IP among Black emerging adults.

Developmental Significance and Context

Emerging adulthood represents a unique developmental period in which Black young adults are grappling with their identity and what it means to be Black in a society that commonly transits messages of racial inferiority (Graham, Sorenson, & Hayes-Skelton, 2014; Sue, 2010). This developmental period represents a particularly vulnerable period for many Black students given the increased salience and frequency of race-related stressors (Arnett & Brody, 2008), coupled with the increased autonomy, evolving social roles, and academic responsibilities characteristic of emerging adulthood (Arnett, 2000; Neblett, Bernard, & Banks, 2016; Roisman, Masten, Coatsworth, & Tellegen, 2004).

The college context represents a noteworthy setting in which these stressors and characteristics are most prominent, as the college experience signifies a transitional period in which youth navigate new experiences within novel environments, typically independent from that of familial contexts (Arnett, 2000; Negga, Applewhite, & Livingston, 2007). As alluded to above, this transition and period of self-exploration may be difficult for some Black students as many Eurocentric values emphasized within this context (e.g., independence, autonomy, and self-sufficiency) may conflict with more Afrocentric values (e.g., communalism, familial support; Arnett, 2003; Neblett et al., 2016). In light of the independent and cumulative effects of these stressors, it is not surprising that the collegial experience has been argued to increase risk for IP (Bernard et al., 2017; Lane, 2015).

While IP has been increasingly studied among Black emerging adults attending predominantly White institutions (PWIs), there is limited work exploring the relevance of IP among Black emerging adults attending Historically Black Colleges/Institutions (HBCUs; Austin et al., 2009). On the one hand, it makes intuitive sense to examine IP within the context of

PWIs given that many of the stressors associated with increased endorsements of IP among Black individuals (e.g., race-related stress, experiences of racial discrimination) have been suggested to occur in environments that are less ethnically and racially diverse (Cokley et al., 2017, 2013). On the other hand, work by Austin et al. (2009) provided evidence to suggest that IP may also be an important construct to consider within predominately Black environments, as the authors found IP to mediate the relationship between academic survivor's guilt (i.e., feelings of guilt related to high academic achievement relative to family members) and depressive symptoms within a sample of Black students attending an HBCU. Taken together, despite the markedly different stressors that Black students negotiate within PWIs and HBCUs (Negga et al., 2007), IP appears to represent a prevalent and deleterious set of cognitions within both contexts. Thus, while a comparative investigation of IP between students attending PWIs and HBCUs is outside the scope of this study, this literature makes a compelling case to incorporate a more representative sample in future investigations of IP in order to substantiate its occurrence within both settings.

Organization of this Document

The current chapter has provided an introduction and overview of the current study. The following chapters in this document detail the background and significance of the project, the method and analytic plan, results, and a discussion of the findings. Chapter 2 provides a review of IP literature within both predominately White and Black samples, a detailed discussion of the validity IP measurement tools, and outlines the study aims of the three studies incorporated within this document. Chapters 3, 4, and 5 review the methods, analytic strategies, and results for each of the respective quantitative and qualitative studies within this project. Finally, in addition to discussing the collective findings of the project, Chapter 6 will provide a discussion of the

strengths and limitations, implications and areas for possible research, clinical significance and recommendations, and overarching conclusions.

CHAPTER 2: LITERATURE REVIEW

The goal of this chapter is to provide a critical review of extant research exploring IP. As such, this chapter will: 1) introduce the origin of IP, in addition to highlighting the unique characteristics of IP that make it distinguishable from other related constructs; 2) provide a presentation of correlates that have been linked to IP among predominately White and Black samples within both quantitative and qualitative studies; 3) discuss the utility and validity of IP assessment tools commonly used in the literature; and 4) articulate the limitations of the current state of IP literature. The chapter will conclude with a presentation of the study aims in addition to the respective research questions and hypotheses.

Background of Impostor Phenomenon

Coined by Clance and Imes (1978), IP was first observed during individual psychotherapy sessions among high achieving women who described intense feelings of a self-perceived sense of intellectual fraudulence. IP represents a maladaptive set of cognitions that impedes on individuals' ability to internalize their own success and take pride in their accomplishments. Individuals who endorse high levels of IP also fear that their self-perceived sense of incompetence will one day be discovered and exposed as false or fraudulent (Clance & Imes, 1978; Clance & O'Toole, 1987). In light of these concerns, those high in IP often place significant stress on themselves in efforts to live up to high self-imposed standards (e.g., unrealistic expectations, perfectionistic tendencies) to counter the negative way they perceive themselves and the unfavorable way in which they believe they are perceived by others (Leary et al., 2000). Consequently, those high in IP have been found to report a heightened fear of failure

(Ross & Krukowski, 2003) and negative evaluation (Chrisman, Pieper, Clance, Holland, & Glickauf-Hughes, 1995). As noted by Clance (1985), individuals struggling with IP have "extreme anxiety when they think they've made a mistake; they take drastic measures not to err or appear foolish in front of others" (p. 27). Yet, even in the face of objective success (e.g., high performance, awards, peer recognition), individuals high in IP commonly discount their abilities by attributing them to external factors (e.g., luck, happenstance) over and above that of internal faculties (Harvey & Katz, 1985).

Though certainly not without its criticisms (Leary et al., 2000; McElwee & Yurak, 2007), literature has provided evidence to suggest that IP represents a conceptually valid and distinct construct (Cozzarelli & Major, 1990; Kolligian Jr. & Sternberg, 1991). However, at face value, IP may appear analogous to that of other constructs shown to compromise feelings of competence. For instance, IP and stereotype threat—the threat of confirming a negative social stereotype about one's own group (Steele & Aronson, 1995)— appear to be similar in nature. Yet, upon closer examination, research suggests that stereotype threat operates to impair performance when activated within specific evaluative settings and situations (Spencer, Logel, & Davies, 2016), whereas, IP has been conceptualized to permeate beyond any one particular setting (Clance et al., 1995). As noted by McClain et al. (2016), "the nature of IP as an emergent identity might allow IP to be present across contexts and, thus, may affect various domains…"(p.103). Therefore, IP may represent a chronic and contextually pervasive experience, relative to the situationally activated nature of stereotype threat.

Self-efficacy, or an individuals' beliefs regarding their abilities (e.g., Al-Darmaki, 2004), represents another construct that should be distinguished from IP given their similarities. At a conceptual level, an individual with low self-efficacy might feel and perform poorly on tasks,

whereas an individual experiencing IP may feel incompetent in spite of objective evidence of competence (Lane, 2015; Leary et al., 2000). Thus, while self-efficacy may accurately map onto an individual's performance on a particular task, feelings of IP *are inconsistent and in conflict* with their high levels of objective success. This distinction is in line with empirical evidence suggesting that achievement orientation is a risk factor for IP (King & Cooley, 1995), while being positively correlated with self-efficacy (Bell & Kozlowski, 2002).

Lastly, symptoms of social anxiety may also appear to have many commonalities with symptoms of IP (Leary et al., 2000). However, social anxiety is marked by significant fears of scrutiny from *others*, which causes considerable impairment in social, academic, or vocational contexts (American Psychiatric Association, 2013), whereas individuals endorsing high levels of IP are high achieving and excel (Kumar & Jagacinski, 2006), despite psychologically disparaging cognitions stemming from *internal* beliefs of inferiority (Ross & Krukowski, 2003). As posited by Chrisman et al. (1995), IP experiences may serve as the impetus for social anxiety, as feelings of intellectual incompetence may undergird desires to be perceived by others in a positive light. In sum, while IP may appear to share characteristics of other conceptually related variables, it also has distinct elements that make it a unique and distinguishable construct.

Literature Review on Impostor Phenomenon

Over the past three decades, IP has received increasing empirical attention within a variety of different contexts (Bernard & Neblett, 2018; Sakulku & Alexander, 2011). While research has begun to elucidate the nature of IP within Black samples, the majority of work has been conducted within predominately White emerging adult samples. A general consensus within this literature is that IP represents a notable risk factor for negative psychological adjustment outcomes. Studies within predominately White samples have linked IP to numerous indices of negative psychological adjustment outcomes including higher levels of anxiety

(Kumar & Jagacinski, 2006), depressive symptoms (McGregor et al., 2008), low self-esteem (Sonnak & Towell, 2001), and decreased psychological well-being (September, McCarrey, Baranowsky, Parent, & Schindler, 2001).

In light of the harmful psychological implications of IP, several studies have sought to understand the myriad factors that may modulate feelings of intellectual incompetence. For example, gender differences in IP have been an area that has received a lot of attention. On the one hand, some research has found females to report higher rates of IP than males (e.g., Clance & Imes, 1978; McGregor et al., 2008). On the other hand, more recent scholarship has failed to find significant gender differences in IP (e.g., Cokley et al., 2015; Crawford, Shanine, Whitman, & Kacmar, 2016). As such, it appears that IP is important to consider among both males and females.

In addition to gender, scholars have established an association between IP and personality traits among predominately White samples (e.g., Ross & Krukowski, 2003). For example, within emerging adult samples, several studies have documented IP to be positively associated with Neuroticism and negatively related to Extraversion, Agreeableness, and Conscientiousness (Bernard et al., 2002; Chae, Piedmont, Estadt, & Wicks, 1995; Ross, Stewart, Mugge, & Fultz, 2001). In support of the association between neuroticism and social desirability (Soubelet & Salthouse, 2011), individuals who habitually monitor or modify their behaviors to manage external perceptions have also been found to be at an increased risk for IP (Kolligian Jr. & Sternberg, 1991; McElwee & Yurak, 2007). Said differently, cognitive strategies employed to avoid or negate negative self-perceptions of intellectual incompetence (e.g., self-handicapping, self-monitoring) positively predict endorsements of impostor cognitions among predominately

White college student samples (Cowman & Ferrari, 2002; Ferrari & Thompson, 2006; Leary et al., 2000).

Finally, a small body of literature has also catalogued various familial factors that may be associated with IP. For instance, King and Cooley (1995) found that family achievement orientation (e.g., the emphasis a family places on achievement and competition) positively predicted IP among undergraduates. Furthermore, Sonnak and Towell (2001), illustrated that perceived parental control was the strongest predictor of IP aside from self-esteem. In addition, Castro, Jones, and Mirsalmi (2004) illustrated a significant positive association between IP and parentification, or the process by which a child assumes an emotional or supportive role for parents. These findings are consistent with literature that suggests that parenting styles that are overly protective or overly distant may deprive youth of their ability to adaptively develop feelings of competence (Li, Hughes, & Thu, 2014; Want & Kleitman, 2006).

Impostor Phenomenon Among African Americans

While the overwhelming majority of research conducted in relation to IP has occurred within predominately White samples, an increasing body of literature has begun to explore the relevance and implications of this construct among Black and non-White samples. A general theme within this literature is that there are race-related factors unique to the experiences of Black individuals (and other marginalized groups of color) that shape feelings of IP (Cokley et al., 2017; Peteet, Montgomery, et al., 2015). Scholars suggest that these factors may increase risk and susceptibility for IP (Austin et al., 2009), alter how Black individuals describe the IP experience (Ewing et al., 1996), and have considerable implications for constructs relevant to identity and psychological development (e.g., self-concept, racial identity, self-esteem; Bernard, Hoggard, et al., 2017; Lige et al., 2017; McClain et al., 2016; Peteet, Brown, et al., 2015). As

such, what follows, is a review of the growing body of literature that supports the rationale for examining IP among Black emerging adults.

Perhaps the most popular context in which IP has been explored among Black young adults is within the relationship between race-related stress and mental health. For instance, guided by Spencer's Phenomenological Variant of Ecological Systems Theory (PVEST; Spencer, 1995), some studies have examined IP in the context of minority status stress and mental health. Minority status stress can be defined as "the unique stressors experienced by minority students, which may include experiences with racism and discrimination, insensitive comments, and questions of belonging on a college campus" (McClain et al., 2016, p. 102). Scholarship examining the associations among IP and minority status stress have found that these two constructs are positively associated, and that IP can have stronger or at least equivalent impact on the psychological adjustment of Black college students (Cokley et al., 2013; McClain et al., 2016).

In a similar vein, other studies have examined IP in the context of racial discrimination, considered by many to be among the most universal stressors that Black individuals must navigate throughout the lifespan (Pascoe & Smart Richman, 2009). Through multigroup path analyses, Cokley et al. (2017) found that the association between perceived discrimination and IP was stronger among Black and Latino/a American students in comparison to their Asian American peers. Similarly, grounded within the integrative model (García Coll et al., 1996), Bernard and colleagues (2017) found a positive association between IP and decreased psychological adjustment over an eight month period when Black young women reported high levels of racial discrimination frequency (or low levels of distress caused by discrimination).

Outside of race-related stress, scholars have also explored IP in relation to ethnic and racial identity. In one of the first empirical studies that sought to elucidate predictors of IP among Black students, Ewing and colleagues (1996) found that academic self-concept and immersion–emersion racial identity attitudes were negative predictors of IP. A more recent study found that higher levels of self-esteem mediated the association between racial identity and IP among Black college students (Lige et al., 2017). Furthermore, within a sample of Black and Hispanic college students, Peteet, Montgomery, and Weekes (2015) found that low ethnic identity and low psychological well-being positively predicted IP. Consistent with this cross-sectional research, longitudinal work has shown that certain profiles or patterns of racial identity significantly increased or decreased the extent to which individuals reported cognitions of IP over an eight month period (Bernard, Hoggard, et al., 2017).

Separate from race-related stress and identity, other studies have focused on shedding light on IP in the context of psychological wellbeing. For example, Austin et al. (2009) found that higher levels of academic survivors' guilt (i.e., feelings of guilt related to high academic achievement) exacerbated IP, such that IP mediated the association between survivors guilt and depressive symptoms within a sample of Black college students attending an HBCU. Consistent with these findings, higher levels of IP have also been documented to predict lower levels of self-esteem and greater psychological distress among Black college students (Peteet, Brown, et al., 2015). In light of this literature, it is clear the IP represents an important construct that can serve as a risk factor for decreased psychological adjustment among Black young adults, and that myriad factors unique to the Black experience may both directly and indirectly influence these maladaptive cognitions.

Quantitative Measurement of Impostor Phenomenon

Since its inception, numerous scales have been developed to validate and capture cognitions of IP (Clance & Imes, 1985; Harvey, 1981; Kolligian & Sternberg, 1991). Harvey's (1981)14-item self-report scale represented one of the first standardized scales used to measure IP. However, literature has established this scale to possess several shortcomings including its low reliability, inability to fully capture keystone attributes of IP (e.g., fear of negative evaluation and concerns related to feeling less capable than peers), and language and sensitivity issues (Chrisman et al., 1995; Holmes, Kertay, Adamson, Holland, & Clance, 1993). In response to these limitations, the CIPS— a 20-item self-report measure, and the Perceived Fraudulence Scale (Kolligian & Sternberg, 1991)—a 51-item self-report measure were created. Psychometric validation studies comparing these scales suggests that the CIPS may be a superior measure, given its brevity, wording (which is intended to minimize socially desirable responses), and overall ease of administration (Chrisman et al., 1995; French, Ullrich-French, & Follman, 2008; Holmes et al., 1993). Subsequent investigations of the CIPS have documented this scale to possess strong reliability (i.e., internal consistency) and validity (i.e., discriminant, convergent validity; (Chrisman et al., 1995; Cozzarelli & Major, 1990; French et al., 2008) within predominately White samples, which has led many to recognize this measure as the best and most reliable measure of IP.

Despite the wide use of the CIPS, a large source of variation exists regarding the scale's structure. In an unpublished, yet heavily cited study, Ketray, Clance, and Holland (1992) conducted an exploratory factor analysis to explore the factor structure of the CIPS. Their findings concluded that 16 of the 20 items on the CIPS loaded strongly onto one of three-factors that are commonly cited in present literature. These factors were: (a) *Fake*, (b) *Discount*, and (c) *Luck*. The *Fake* items capture self-doubt and concerns about intelligence and ability. The

Discount items measure thoughts about the inability to internalize and acknowledge good performance and praise. The *Luck* items highlight thoughts of having accomplished tasks due to luck, or chance, and not innate ability.

Seeking to confirm and build upon this work, Chrisman et al. (1995) conducted a psychometric validation study on the CIPS within a sample of 269 predominately White undergraduate students. The first goal of this study was to establish the concurrent and discriminant validity of the CIPS. The authors found that the CIPS was positively correlated with another measure of IP (i.e., Perceived Fraudulence Scale) and could be "substantially differentiated" from well-being measures of depression, social anxiety, self-esteem, and self-monitoring (Chrisman et al., p. 463). The second goal of this study was to elucidate the factor structure of the CIPS to confirm its factorial validity. Through use of exploratory factor analysis, Chrisman et al. produced similar findings to Ketray and colleagues, and concluded that a three-factor model (i.e., Fake, Discount, Luck) using 18 of the 20 items on the CIPS was the most parsimonious factor structure. From these findings, the authors suggested that construct validity for this tool had been established and that the factor structure of this measurement tool was stable.

More recent studies have continued to investigate the factor structure and psychometric properties of the CIPS with inconsistent results. In an investigation of the psychometric properties of the CIPS, French et al. (2008) conducted a confirmatory factor analysis (CFA) to test the fit of the three-factor model, a two-factor model, and a one-factor model within a predominately White sample (87%) of 1271 undergraduate students. Findings revealed problematic factor loadings, poor fit statistics, and unacceptably high correlations of parameter estimates for both the three and one-factor model. As such, a 16-item two-factor model was

deemed to best explain the factor structure of the CIPS. The two-factor model was comprised of a "*Luck"* dimension, and a "*Fake.Discount"* dimension in which the original Fake and Discount subscales were collapsed into one subscale. Conversely, using CFA Jöstl, Bergsmann, Lüftenegger, Schober, and Spiel (2012) examined the factor structure of a16-item German version of the CIPS among a sample of Austrian doctoral students, finding that a one-factor model with specified correlated errors produced better fit statistics and was therefore more parsimonious than that of the three-factor model.

In light of the disagreement about the factor structure of the CIPS, Simon and Choi (2017) compared each of the previously identified factor structures (i.e., one-factor, two-factor, three-factor) against one another to identify the most parsimonious fit. More specifically, the authors utilized CFA to test the factor structure of the aforementioned one, two, and three-factor models using the 20-item CIPS among a predominately White college student sample (64%). Interestingly, their results revealed that all three models produced acceptable fit indices; however, the authors stated that the factors within the two and three-factor models were highly correlated (.84 or higher). Therefore, the one-factor model with specified correlated errors was concluded to be the most parsimonious model. Taken together, despite being considered to be the best measure of IP, there appear to be contradictory accounts of its factor structural and item composition. In considering the inconsistent dialogue related to quantitative measures of IP, it is important to highlight scholarship that has taken alternative approaches to refine and extend our understanding of this construct and its implications among emerging adult samples.

Qualitative Investigations of Impostor Phenomenon

In review of the literature, I was able to locate only two empirical studies that did not utilize quantitative methodologies to explore IP. In the first study, Lane (2015) was interested in elucidating the relevance of IP and how the construct was experienced among 29 predominantly

White emerging adults (ages 18-25) entering into professional roles. Framed within a grounded theory design, this study was conducted in two phases in which participants first completed qualitative surveys, followed by a subsample of the participants providing in-depth individual interviews.

Results from the study revealed several interesting findings that mirror many of the results within quantitative investigations of IP. First, roughly 80% of the participants reported resonating with impostor experiences, including feelings of perceived fraudulence, discounting objective evidence of success, and self-doubt. Second, analyses revealed that participants reported that high motivation, perfectionism, and the inability to self-validate were three characteristics that increased risk for IP feelings. Participants also reported that comparative tendencies (e.g., comparing performance and perceived abilities with peers) and evaluative contexts strengthened feelings of IP. However, the more time an individual spent in a specific role, the more feelings of IP diminished. Thus, the authors suggested that gaining experience in a particular setting, context, or role appeared to reduce feelings of IP among emerging adults. Third, participants noted several performance (e.g., avoidance) and affective (e.g., anxiety, guilt) related outcomes associated with feelings of intellectual incompetence. Based on these findings, the author concluded that IP is a sequential process whereby participants first experience feelings of self-doubt when faced with a specific task, which is then followed by feelings of incompetence when completing the task, and concludes by minimizing success following task completion.

With respect to the second study, Craddock, Birnbaum, Rodriguez, Cobb, and Zeeh (2011) were interested in exploring factors that may influence IP experiences among six doctoral graduate students (three males and three females reported to be aged from late-20s to mid-40s).

Two participants identified as persons of color (i.e., African American, Latina, and Native American). Framed within a case-study design, this study first utilized individual interviews to gather data related to IP with each participant, and then collected supplemental data through use of a focus group in which all participants came together to speak about their experiences.

Through use of concurrent data analyses, cognitions of IP were found to be salient and common within the sample, influenced by self-perceptions of inadequacy and academic preparedness, fears of failure, and familial expectations. Furthermore, findings provided evidence to suggest that IP may be most prominent during the transition to a new role, as participants identified first year, first semester coursework and expectations as a significant source of IP. Many students were also found to report questioning the extent to which they belonged on campus, and attributed these doubts to their IP cognitions. Third, and perhaps most notably, was the emergent theme related to the awareness of racial minority status raised only by the students of color in the sample. More specifically, these students reported that not having adequate representation on campus and feelings of marginalization and isolation within their program were particularly significant in contributing to cognitions of IP. These statements are in line with research that suggests that an awareness of racial minority status may evoke a sense of "othering" that may exacerbate cognitions of IP (Lige et al., 2017; Peteet, Brown, et al., 2015).

In sum, while there is indeed utility in quantitative investigations of IP, the studies above illustrate that more open ended and inductive approaches may shed light on aspects of IP that otherwise would have gone unrevealed. As noted by Creswell and Plano Clark (2011), open-ended approaches assist the researcher in understanding complex processes or phenomenon—such as understanding how Black students experience IP, for which scaled responses are insufficient. Therefore, while often underutilized, qualitative inquiry has the potential to extend

beyond traditional close-ended quantitative techniques to add much needed contextualization and nuance to our understanding of IP among Black students.

Limitations

Though quantitative and qualitative studies have begun to shed light on IP among young adults, numerous shortcomings of the current state of the literature are worth noting. First, despite being widely considered to be the best measure of IP, psychometric investigations of the CIPS have struggled to produce consistent results. For example, while some studies suggest that the CIPS is multidimensional (Chrisman et al., 1995; French et al., 2008), others suggest that this scale is unidimensional (Jöstl et al., 2012; Leary et al., 2000; Simon & Choi, 2017). Moreover, there appears to be little consensus at the item level of the CIPS, as research has ranged in the extent to which they have used all 20-items, 18-items, 16-items, or even only 7-items of the CIPS within their analyses. Conversely, despite literature attempting to distinguish IP from conceptually similar constructs (Chrisman et al., 1995; Cozzarelli & Major, 1990), these abovementioned inconsistencies have led some to call into question the efficacy of the CIPS to distinguish as a unique construct (Leary et al., 2000; McElwee & Yurak, 2007). For this reason, Bernard and Neblett (2018) note that this conceptual ambiguity may cause IP to be perceived as a "fuzzy concept", which Ziegler, Kemper, and Lenzner (2015) define as a concept with unclear or vague operational boundaries. With these concerns in mind, there is an immediate need to establish construct validity for the CIPS among non-White samples.

Second, although literature indicates that cognitions of IP are prominent among Black individuals, little attention has been given to establishing the construct validity of the CIPS among Black samples. Nevertheless, the bulk of extant research has proceeded under the assumption that traditional measures of IP accurately extend to capture feelings of intellectual incompetence among Black individuals. This assumption is problematic given that scholarship

has yet to take steps to empirically investigate the construct validity of the CIPS among Black and other racial/ethnic minority samples. This oversight is striking considering that IP and subsequent measures were developed to highlight the experiences of high achieving White women roughly 40 years ago. Thus, with the exception of basic reliability reporting (i.e., Cronbach's Alpha), the psychometric properties and validity of this measurement tool remains an unexplored area of research among Black samples. Given that research has begun to explore IP in more complex and nuanced ways among Black samples (e.g., as a mediator, moderator, and longitudinally; Bernard et al., 2017; Cokley et al., 2017; Lige et al., 2017), it is crucial for construct validity to be established for the CIPS among Black people.

Third, the majority of research investigating IP has relied heavily on quantitative survey practices with the assumption that the traditional conceptualization of IP aligns with the experiences of IP among Black samples. While these studies have certainly been vital in elucidating the numerous correlates associated with IP, bourgeoning research suggests that extant measurement tools of IP (i.e., CIPS) may overlook many of the experiences unique to being an ethnic/racial minority (e.g., race-related stress, racial identity; Bernard, Hoggard, et al., 2017; Ewing et al., 1996). This notion is articulated well by an African proverb that asserts that "*the true tale of a lion hunt will never be told as long as the hunter tells the story*." That is, attempting to generalize a particular experience from only one point of view may overlook many of the unique experiences from another perspective. Consistent with this idea, recent literature has argued that among Black individuals, cognitions of IP may look qualitatively different from that of their White counterparts (Bernard & Neblett, 2018; Ewing et al., 1996). In support of this argument, literature suggests that Black college students' endorsements of IP and experiences of race-related stressors are intricately linked (Bernard, Lige, et al., 2017; Cokley et al., 2013; Lane,

2015), which is not the case for their non-Black counterparts. Thus, while we know that experiences unique to the Black experience may contribute to IP cognitions, what remains unclear is how reports of IP among Black individuals may be similar or dissimilar from that of their White peers. Therefore, additional work is needed to understand how Black emerging adults speak about IP and the extent to which their narratives align or diverge from our current conceptualization and measurement of this construct.

Study Aims

In considering the aforementioned limitations, the current study had three overarching aims that took the form of three separate studies, which together sought to investigate the construct validity of the CIPS among Black emerging adults. The first aim was to examine the factorial (i.e., the extent to which previously identified factor structures could be replicated; Piedmont, 2014) and discriminant validity (the distinguishability of a specific scale from conceptually similar, yet unrelated constructs; Campbell & Fiske, 1959) of the CIPS among Black college students. Therefore, two research questions guided the first study:

RQ1: What is the dimensionality of the CIPS among Black students?

In light of the disagreement and variability in findings related to the factor structure of the CIPS, it is difficult to determine a priori which factor model will best fit the data within the present study. However, consistent with literature documenting the multidimensional nature of the CIPS (Chrisman et al., 1995; French et al., 2008), I hypothesized that among Black college students, the best fitting model would be multidimensional in nature. More specifically, I predicted that a two or three-factor model would fit the data better than that of a unidimensional model. Though there is indeed evidence for a unidimensional model (Jöstl et al., 2012; Simon & Choi, 2017), only a small number of studies have found this to be the case, and there is little agreement within these studies to suggest a stable unidimensional factor structure.

RQ2: To what extent can discriminant validity be established for the CIPS among Black students?

Consistent with previous work that has established the CIPS to be a unique and valid construct within predominately White samples, (Chrisman et al., 1995; Cozzarelli & Major, 1990), I hypothesized that discriminant validity would be established for the CIPS among Black college students. Said differently, I predicted that the CIPS would be distinguishable from conceptually similar constructs including achievement motivation, locus of control, coping styles, perfectionism, self-esteem, fear of negative evaluation, social anxiety, and minority status stress.

The second aim of the study was to examine if the factor structure of the CIPS remained the same across multiple time points, otherwise known as *longitudinal measurement invariance*. Measurement invariance is considered a critical component of psychometric validation (Meredith, 1993), and if established, provides evidence to suggest that changes in scores on a particular instrument (i.e., CIPS) reflect actual differences in the latent construct being measured (i.e., IP). However, if measurement invariance is violated, differences in scores over time on a particular measure may not correspond to actual changes of the measured latent variable, and instead may lead to limited or inappropriate conclusions related to the causes or factors that influenced such change (Fried et al., 2016). In light of the inconsistent dialogue and evidence surrounding the factor structure of the CIPS, invariance testing will provide much needed clarity on this matter through a longitudinal validation approach. The following research question guided the second study of this project, which investigated the measurement invariance of the CIPS.

RQ3: To what extent does the factor structure of the CIPS remain invariant over time?

As described previously, extant scholarship examining the factor structure of the CIPS within predominately White samples has resulted in inconclusive findings and disjointed conclusions. As such, the factor structure of the CIPS appears to be highly volatile and sample determinant. For this reason, it is difficult to believe that any particular factor structure will remain invariant when examined over time. As such, I hypothesize that the CIPS will violate longitudinal measurement invariance assumptions when examined within a sample of Black emerging adults.

Finally, the third aim of the present work sought to compliment the prior studies by using qualitative methodologies (i.e., in-depth interviews) to elucidate how Black students discussed and made sense of IP, with the goal of comparing student narratives to the traditional theoretical conceptualization of this construct. As noted by DeCuir-Gunby and Schutz (2016), "the attempt with qualitative research . . . is to explore how individuals understand and experience [a] topic of interest" (p. 36). As such, I was particularly interested in elucidating the extent to which Black student narratives of IP align or diverge from IP as traditionally conceptualized in the literature. I argue that integrating the narratives of Black students within investigations of IP would substantially improve how IP is conceptualized and contextualized among non-White samples. Thus, findings from this study can substantially improve the precision of future explorations of IP among Black samples. The following research questions guided the qualitative exploration of IP which comprised Study 3:

RQ4: How does the way in which Black students speak about IP align or diverge with the original themes posited in its original conceptualization and measurement (e.g. feeling luck, fraudulent, and discounting of ability)?

a. What is the nature of IP among Black college students?

b. How do Black students describe cognitions of IP?

c. How do Black students make sense of IP?

CHAPTER 3: STUDY 1

This study investigated the factorial and discriminant validity of the CIPS. As stated by Dimitrov (2010), examining these forms of validity represent key steps in establishing the construct validity of any particular measure. Thus, the purpose of this study was to investigate the extent to which previously identified CIPS factor structures generalize to the current sample, and to establish the distinguishability of this scale from other conceptually similar measures.

Method

Participants. Participants were recruited to participate from four public institutions in the state of North Carolina. Two of these universities were PWIs, and two were HBCUs. The overall sample originally comprised of 272 African American/Black students. However, several cases were excluded from analyses due to being ineligible (e.g., outside of required age range), duplicates (e.g., same person completing data multiple times), or incomplete data. The final sample comprised of 261 students, 134 students attended PWIs (51%) and 127 students attended HBCUs (49%); 200 females (77%) and 59 males (23%), with an average age of 19.92 years (*SD* = 1.61). Notably, students attending PWIs reported significantly higher IP scores (*M* = 3.24; *SD*= .73) than students attending HBCUs (*M* = 2.73; *SD* = .77), $t(259) = 5.51$, $p < .001$.

Participants attending PWIs had an average age of 19.9 years (*SD* = 1.37; age range = 18–25). Approximately 34% of participants from PWIs were seniors, 31% were juniors, 23% were sophomores, and 10% were first-year students. The majority of students were not first-generation college students (70%), and self-reported cumulative average was a "B+" (M_{gpa} = 3.20; *SD* = 0.51). The median report of socioeconomic status (SES) was "middle class,"

however, 7% reported their family SES as poor, 24% as working class, 47% as middle class, and 22% as upper middle class. Additionally, the majority of students endorsed heterosexual orientations (84%), whereas, 8% reported bisexual, 4% reported gay or lesbian, and 4% reported unsure or other.

Participants attending HBCUs had an average age of average age of 19.97 years (*SD* = 1.37; age range = 18–25). Approximately 24% of participants from HBCUs were seniors, 32% were juniors, 28% were sophomores, and 15% were first-year students. The majority of students were not first-generation college students (58%), and self-reported cumulative average was a "B" (M_{gpa} = 3.03; *SD* = 0.61). The median report of socioeconomic status (SES) was "middle class," however, 4% reported their family SES as poor, 35% as working class, 44% as middle class, 15% as upper middle class, and 1% as wealthy. Additionally, the majority of students endorsed heterosexual orientations (88%), whereas, 7% reported bisexual, 2% reported gay or lesbian, and 1% reported unsure or other.

Procedures

Following institutional review board approval from each university in which data were collected, the project was advertised in several ways to garner interest (i.e., mass emails, flyers, word of mouth). To be eligible to participate, students were required to self-identify as African American/Black, be enrolled full-time as an undergraduate student at one of the four institutions in which data were collected, and be between the ages of 18-25. Individuals interested in participating were screened for eligibility and then sent an electronic Qualtrics link to complete the online questionnaire. The questionnaire took approximately 35-45 minutes to complete. Following completion of the study, participants were given the opportunity to indicate their interest in participating in the qualitative portion of this study. Regardless of interest, all

participants who completed the online questionnaire were compensated via a $10 Amazon gift card.

Measures (See Appendix)

Sociodemographic information. Students were asked to complete several sociodemographic items including age, socioeconomic status, sex, race/ethnicity, grade point average, class year, major, racial composition of their institution, and first-generation status.

Impostor Phenomenon. Clance's Impostor Scale (CIPS; Clance, 1985) is a 20-item self-report measure that assesses the extent to which individuals experience impostor feelings or worries (α = .92). Responses on the CIPS are rated from 1 = *not at all true* to 5 = *very true*, with higher scores reflecting more intense impostor feelings. Sample items from the CIPS include "At times, I feel my success was due to some kind of luck" and "I often compare my ability to those around me and think they may be more intelligent than I am." Psychometric investigations of the CIPS document the scale to possess satisfactory internal consistency, in addition to concurrent and discriminant validity within White college student samples (Chrisman et al., 1995; Cozzarelli & Major, 1990). Recent studies utilizing the CIPS within Black college student samples suggest that the CIPS has sound internal reliability. For instance, a recent longitudinal study reported the Chronbach's alpha for the CIPS to be 0.93 at two time points, eight months apart (Bernard, Hoggard, et al., 2017).

Achievement Motivation. The Revised Achievement Motives Scale (AMS-R; Lang & Fries, 2006; α = 71) is a 10-item self-report measure that assesses achievement motivation. This abbreviated measure represents a condensed version of the original 30-item measure developed by Gjesme and Nygard (1970). The AMS-R is comprised of two 5-item subscales designed to capture motivations to achieve (MTA; α = .86) and 5 items designed to measure motivations to avoid failure (MTF; α = .83). Sample items on the MTA subscale are: "I like situations, in which

I can find out how capable I am" and "I am attracted by tasks, in which I can test my abilities." Sample items on the MTF subscale are: "I feel uneasy to do something if I am not sure of succeeding" and "Even if nobody would notice my failure, I'm afraid of tasks, which I'm not able to solve." Total scores for each subscale are calculated from participant responses on a Likert scale (1 = *"strongly disagree*" to 4 = "*strongly agree*"). Higher scores on the MTA represent a greater focus on achievement and positive outcomes, whereas higher scores on the MTF correspond to greater concerns of negative outcomes and fears of failure. Extant literature using the AMS-R illustrates the subscales to be valid and internally reliable measures of achievement motivation in both White and Black samples (Caldwell & Obasi, 2010; Lang & Fries, 2006). Moreover, the MTF subscale has been shown to positively correlate with measures such as fear of negative evaluation, worry, and test anxiety, while the MTA subscale has been documented to positively correlate with measures of flow, persistence, and task enjoyment (Lang & Fries, 2006).

Locus of Control. Locus of control was measured using the Multidimensional-Multiattributional Causality Scale (MMCS; Lefcourt, 1981; $\alpha = .75$). The MMCS is comprised of two separate sections that measure achievement and affiliation goals through four subscales that correspond to causal internal (i.e., ability, effort) and external (i.e., situation, luck) attributions. For the purpose of the current project, only the achievement section of the scale was utilized. The achievement section of the MMCS is composed of four subscales that align with each of the respective internal and external attribution styles (ability, effort, situation, luck). Total scores for each subscale are calculated from participant responses on a Likert scale (1 = *"strongly disagree*" to 5 = "*strongly agree*"). The *Ability* subscale ($\alpha = .59$) assesses the degree to which participants attribute academic success to internal or preexisting knowledge or skill

level (e.g., “When I get good grades, it is because of my academic competence”). Higher scores on this subscale represent higher levels of internal ability attributions. The *Effort* subscale (α = .73) measures the extent to which participants believe that their academic performance is due to active attempts to understand course content (e.g., “When I fail to do as well as expected in school, it is often due to a lack of effort on my part”). Higher scores on this subscale correspond to higher levels of effort-related attributions. The *Context* subscale (α = .61) measures the degree to which participants believe that their academic performance is a result of external factors outside of their control including the difficulty of a particular professor and ease of course content (e.g., “Some of my good grades may simply reflect that these were easier courses than most”). Higher scores on this subscale represent higher levels of contextual attributions. Finally, the *Luck* subscale (α = .74) measures the extent to which participants attribute their academic performance to chance (e.g., “Sometimes my success on exams depends on some luck”). Higher levels of this subscale represent higher levels of luck-based attributions. Several studies examining the psychometric properties of this scale have established construct validity (e.g., discriminant and convergent validity), in addition to the multidimensionality of the MMCS (Hamilton & Akhter, 2002; Powers, Douglas, & Choroszy, 1983).

Fear of Negative Evaluation. The Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983; Weeks et al., 2005) was used to measure concerns about negative social judgement (α = .96). The BFNE is a self-report measure that asks participants to indicate how much they believe 12 different statements related to negative evaluation concerns are characteristic of their behavior (1 = “*not at all characteristic of me*” to 5 = “*extremely characteristic of me*”). Higher scores on this scale are indicative of greater fears of negative evaluation. Sample items are “I am frequently afraid of other people noticing my shortcomings” and “I am afraid that people will

find fault with me." Previous studies have demonstrated the BFNE to have strong internal consistency among Black individuals (Johnson & Anderson, 2014). Psychometric investigations of the BFNE have documented the BFNE to be a valid (e.g., discriminant validity) and reliable measure of fear of negative evaluation (e.g., test-retest, inter-item reliability; Collins, Westra, Dozois, & Stewart, 2005).

John Henryism. The John Henryism Scale for Active Coping (James, Hartnett, & Kalsbeek, 1983) was used to measure John Henryism, or the proclivity of an individual to actively engage a perceived stressor with a mindset that through persistent, hard work, and determination, stressors and demands can be overcome ($\alpha = .76$). The John Henryism scale is a self-report measure that asks participants to rate the degree to which they agree with 12 statements that describe characteristics of active coping (1 = "*completely false*" to 4 = "*completely true*"). Sample items on this measure are "When things don't go the way I want them to, that makes me work even harder" and "I don't let my personal feelings get in the way of doing a job." Higher scores on this scale correspond to more effortful coping in the face of difficult psychosocial stressors. Previous studies indicate that this scale demonstrates adequate reliability (Hudson, Neighbors, Geronimus, & Jackson, 2015) and construct validity (i.e., discriminant and convergent) among Black individuals (Fernander, Dura'n, Saab, Llabre, & Schneiderman, 2003).

Minority Status Stress. The Minority Status Stress Scale (MSSS; Smedley, Myers, & Harrell, 1993) was used to capture experiences of minority status stress ($\alpha = .96$). The MSSS is comprised of 37 self-report items anchored on a 6-point Likert-type scale (0 = *does not apply* to 5 = *extremely stressful*), with higher scores corresponding to higher levels of minority status stress. The scale is argued to capture minority specific stressors (e.g., negative stereotypes) and

more general stressors that may by intensified due to minority status (e.g., pressures to perform well in school). A sample item on the MSSS is "White students and faculty expect poor academic performance from students of my race." Previous investigations suggest the MSSS contains six subscales measuring environmental stresses, achievement stresses, race-related stresses, interpersonal stressors with White people, intrapersonal stresses, and interpersonal stresses among ethnic minority groups (Cokley et al., 2013). However, recent research suggests the total score may have a stronger internal consistency, as previous studies have reported Chronbach's alphas ranging from 0.93 to 0.97 (Cokley et al., 2013; Greer & Brown, 2011; Greer & Chwalisz, 2007; McClain et al., 2016).

Perfectionism. Perfectionism was measured by the Frost Multidimensional Perfectionism Scales (FMPS; Frost, Marten, Lahart, & Rosenblate, 1990). The FMPS is a 35-item self-report measure designed to measure six dimensions of perfectionism: Concern over Mistakes, Personal Standards, Parental Expectations, Parental Criticism, Doubts about Actions, and Organization. For the purpose of the current study, only the *Concern Over Mistakes* and *Personal Standards* subscales were used as they reflect maladaptive and adaptive characteristics of perfectionism, respectively (Bieling, Israeli, & Antony, 2004; Frost, Heimberg, Holt, Mattia, & Neubauer, 1993). The *Concern Over Mistakes* subscale ($\alpha = .90$) assesses negative reactions to mistakes, tendencies to construe mistakes as equal to failure, and beliefs that failure will lead to disrespect from others (e.g., "If I fail at work/school, I am a failure as a person"; "People will probably think less of me if I make a mistake"). The *Personal Standards* subscale ($\alpha = .77$) measures the degree to which individuals self-impose very high standards and importance of these standards for self-evaluation (e.g., "It is important to me that I be thoroughly competent in everything I do"; "I expect higher performances in my daily tasks than most people"). Previous investigations

have established this scale as a reliable and valid measure of perfectionism (Hewitt, Flett, Turnbull-Donovan, & Mikail, 1991).

Self-esteem. Global self-esteem was assessed using the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965; α = .89). Participants rated the degree to which they agree with 10 statements (e.g., "I feel that I have a number of good qualities") on a 4-point scale (1 = "*strongly agree*" to 4 = "*strongly disagree*"). Higher scores on this measure represent higher levels of global esteem. This inventory has evidenced acceptable internal reliability (α = 0.76) when used among Black samples (e.g., Harris-Britt, Valrie, Kurtz-Costes, & Rowley, 2007).

Social Anxiety. The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) was used to measure symptoms of social anxiety (α = .92). The SIAS is a 20-item self-report measure that asks participants to indicate the degree to which they feel statements are characteristic or true for them (1 = "*not at all*" to 4 = "*extremely*"). Sample items on this measure are "I worry about expressing myself in case I appear awkward" and "I find it difficult mixing comfortably with the people I work with." Higher scores on this scale are indicative of greater symptoms of social anxiety. Previous studies examining the SIAS to have sound internal consistency among Black samples (Carter, Sbrocco, Tang, Rekrut, & Condit, 2014). Furthermore, psychometric investigations of the SIAS have established construct validity (e.g., convergent and discriminant validity; Osman, Gutierrez, Barrios, Kopper, & Chiros, 1998).

Analytic Plan

To examine and compare the different factor structures of the CIPS, confirmatory factor analyses (CFA) were conducted using Mplus 8 (Muthén & Muthén, 2015). In addition to a base model in which no correlates or dimensions were specified, three additional models based on prior research were evaluated: a one-factor model with correlated errors (Jöstl et al., 2012), a

two-factor model (French et al., 2008), and a three-factor model (Chrisman et al., 1995). Furthermore, in light of the increasing prevalence of bi-factor models, which evaluate general and domain specific factors underlying a particular measure (i.e., total score and subscore; (Reise, Moore, & Haviland, 2010), two bi-factor confirmatory factor analysis (bi-CFA) models were also examined for French's two-factor and Chrisman's three-factor model. If the bi-CFA revealed an improvement in fit above and beyond the previously discussed models, it suggests that a total score of IP in addition to subfactor scores can be meaningfully calculated and interpreted.

Factor structures were estimated using weighted least squares (WLSMV) estimation in place of Maximum Likelihood (ML) estimation, as the data in the current study are ordinal and violate assumptions of multivariate normality (Finney & DiStefano, 2006). Since factor models were non-nested, traditional comparative fit indices (i.e., Chi Square difference test) are unavailable when using the WLSMV estimation framework. As such, for each model tested (including bi-factor CFAs), model fit was evaluated and compared using a number of goodness-of-fit indices—specifically, the Root Mean Square Error of Approximation (RMSEA; $\leq .08$; Steiger & Lind, 1980), Tucker-Lewis Index (TLI; $\geq .95$; Tucker & Lewis, 1973, and Comparative Fit Index (CFI; $\geq .95$; Bentler, 1990)

With respect to discriminant validity, structural equation modeling (SEM) was utilized to investigate the extent to which the CIPS could be differentiated from other conceptually similar constructs. Recent research suggests that SEM is a more appropriate and precise analytic technique to assess for discriminant validity, as it provides scholars the ability to estimate relationships among variables while simultaneously modeling latent variables free of measurement errors (Chin, 1998). SEM was used to elucidate the degree to which the CIPS

could be distinguished from theoretically related constructs using recommendations from David Kenny, that suggests that a correlation of .85 or larger indicates poor discriminant validity (Kenny, 2014). More specifically, the CIPS was compared to measures assessing achievement motivation, locus of control, fear of negative evaluation, John Henryism, minority status stress, perfectionism, self-esteem, and social anxiety. Covariates within these analyses included age, sex, and racial composition of college attended.

Results

Prior to examining the primary aims of the study, preliminary analyses included the examination of means and standard deviation of all study variables (Table 1).

Dimensionality of the Clance Impostor Scale

As seen in Table 2, the basic one-factor model with no correlated errors demonstrated adequate model fit: $\chi^2(170) = 471.85$, $p < .001$; RMSEA = .08; TLI = .95, CFI = .95. Similarly, the correlated errors one-factor model, demonstrated acceptable fit: $\chi^2(101) = 261.57$, $p < .001$; RMSEA = .08; TLI = .97, CFI = .97. However, within both of the one-factor models, item 1 was found to load negatively and non-significantly (b_{basic} = -.08, p = .19; $b_{correlated\ errors}$ = -.09, p = .15). With respect to the two-factor solution, model fit produced fit indices that were outside of the acceptable range: $\chi^2(103) = 347.42$, $p < .001$; RMSEA = .10; TLI = .95, CFI = .96, and produced remarkably high correlations between the two-factors (r = .98). Finally, while results for the three-factor solution demonstrated acceptable model fit: $\chi^2(132) = 374.96$, $p < .001$; RMSEA = .08; TLI = .95, CFI = .96, the model evidenced high correlations between each of its factors (rs = .93). Table 3 provides a summary of item fit for each of the aforementioned models.

Despite the problematically high correlation of the two and three-factor models, the model fits produced patterns of factor loadings that were conceptually interpretable, with high factor loadings (>.30) and no factor cross-loadings. Therefore, an alternative model was tested

that may be more advantageous for examining the dimensionality of the CIPS (Reise et al., 2010). More specifically, a three-factor bi-CFA (i.e., one general and two subtype factors) and a four-factor bi-CFA (i.e., one general and three subtype factors) were conducted to investigate the multiple dimensions of the CIPS after parsing out item response variance from the general factor.

The three-factor bi-CFA model demonstrated good model fit: $\chi^2(87) = 203.48$, $p < .001$; RMSEA = .07; TLI = .97, CFI = .98. However, correlations between the latent subfactors remained high (.60). In comparison, the four-factor bi-CFA evidenced slightly better model fit: $\chi^2(114) = 219.41$, $p < .001$; RMSEA = .06; TLI = .98, CFI = .98, with subfactors being correlated less than the previous model (rs $\leq .54$) As shown in Table 4, all items loaded strongly on the general factor and no cross-loadings were identified between the three subtype factors. Therefore, the four-factor bi-CFA was determined to fit the data best. The general factor which consisted of 18-items (items 3-20 on the CIPS) reflects IP more broadly ($\alpha = .93$). In addition, as specified by Chrisman et al. (1995) the first subtype factor consisted of four items that reflect the *Luck* dimension of IP ($\alpha = .74$; sample item: "At times, I feel my success has been due to some kind of luck"), the second subtype factor contained eight items that together capture the *Fake* dimension of IP ($\alpha = .90$; sample item: "I'm afraid people important to me may find out that I'm not as capable as they think I am."), and the third subtype factor was comprised of two items that together captured the *Discount* dimension of IP ($\alpha = .69$; sample item: "If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done"). See Figure 1 for a visual representation of the various factor structures tested.

Discriminant Validity of the Clance Impostor Scale

Controlling for gender, college attendance, and age, I next investigated discriminant validity for the CIPS. More specifically, discriminability was examined for the general factor (i.e., total score) and specific subfactors (i.e., Fake, Luck, Discount) of the CIPS identified in the

four-factor bi-CFA. As seen in Table 5, the general factor of IP was found to be positively associated with positive (i.e., hope for success) and negative (i.e., fear of failure) achievement motivations (b = .33, p = .014; b = .39, p < .001, respectively), and fear of negative evaluation (b = .20, p = .015). Moreover, the general factor of the CIPS was found to be negatively correlated with John Henryism (b = -.59, p = .009) and self-esteem (b = -.59, p < .001).

With respect to the subfactors, the *Luck* subscale was found to be positively associated with the luck specific locus of control subscale (b = .63, p < .001). Furthermore, the *Fake* subscale was positively associated with the ability specific locus of control subscale (b = .47, p = .009), and also negatively associated with social anxiety (b = -.47, p = .003) and luck-based locus of control (b = -.41, p = .031). Finally, the *Discount* subscale was positively associated with the ability specific locus of control subscale (b = .57, p = .015), and also negatively linked with indicators of social anxiety (b = -.69, p = .001).

Discussion

Within the past decade, increasing attention has been given to understanding the relevance and implications of IP among Black individuals. Despite this literature, relatively little work has sought to establish the construct validity of popular scales designed to capture IP cognitions among Black samples. As a result, the factor structure and discriminability of tools such as the CIPS remain largely unexplored within this population. Thus, the purpose of this study was twofold. The first aim was to examine the factorial validity of the factor structure of the CIPS within a sample of Black emerging adults. Results partially supported the hypothesis of factorial multidimensionality, as bi-CFA revealed a four-factor model for the CIPS that demonstrated excellent model fit and good interpretability. In understanding the latent factors identified, the factor loading patterns suggested an 18-item general IP factor, in addition to a 4-item Luck subscale, 8-item Fake subscale, and 2-item Discount subscale. While this factor

structure strongly resembles Chrisman and colleagues three-factor model, it is important to note that CFA analyses indicated that none of the previously identified one, two, and three-factor models generalized to the current sample.

Interestingly, when the multidimensional models were examined through a bi-factor framework, fit increased substantially. It is possible that this improvement may be attributed to the ability of the bi-factor model to parse out item response variance from a general factor (Reise et al., 2010). In support of this hypothesis, scholars posit that a strength of bi-factor models is their ability to account and partition the multidimensional variance of a construct (Chen, West, & Sousa, 2006). Thus, when considering the high correlation observed between the general factor of IP and its three subfactors, it makes sense that the both bi-factor models produced fit indices that were significantly better than the non bi-factor models.

Given the multidimensionality of the CIPS, the bi-factor model may offer a practical way of making sense of the heterogeneous ways in which IP may manifest among Black students. Said differently, a bi-factor approach may better capture individual differences in responses on the CIPS (Reise, Morizot, & Hays, 2007). As an example, while one individual may endorse high self-perceptions of fraudulence, he or she may not report other dimensions of IP (e.g., cognitions of luck or tendencies to discount their own abilities) as germane to their own experiences. In contrast, another individual may report a different pattern of responses wherein cognitions of luck are more prominent to their own experiences relative to the discounting and fraudulent dimensions. On the surface, these individuals may produce comparable overall endorsements of IP (as captured by the general factor), yet their subscale scores (as measured by the subfactors) may tell a very different story. Accordingly, there may be some potential benefits of estimating the CIPS as both a general and domain specific indicator of IP. As a global

indicator, the CIPS could be used to catalogue general cognitions of IP as commonly used within the literature. As a domain specific indicator, the subscales of the CIPS could be used to deconstruct if a specific set of cognitions related to luck, discounting success, or fraudulence have a greater impact in shaping IP.

Though there may be advantages of estimating the CIPS as a bi-factor model, the failure to find a consistently generalizable model structure represents a recurrent trend within the literature that may be indicative of larger psychometric problems for this tool. For example, every published study examining the validity or psychometric properties of the CIPS has reported using less than all 20-items. This is concerning as it suggests that there are several items on this scale that may not be performing as intended. Analyses within the current work supported this assertion, as item 1 ("I have often succeeded on a test or task even though I was afraid that I would not do well before I undertook the task") was found to explain very little variance ($r^2 \leq$ .008) when included in models, and also appeared to load negatively or non-significantly. Though only included in one model, item 2 ("I can give the impression that I'm more competent than I really am") also appeared to only contribute marginally, contributing to less than .08% of the variance explained. Moving forward, scholars should consider the utility of more item driven analyses (e.g., item response theory) to clarify item functioning on the CIPS.

Moreover, the high correlation between the different dimensions of the CIPS has been a recurrently cited concern (Brauer & Wolf, 2016; French et al., 2008), and was also observed within the present study. As noted by French and colleagues (2008), the high correlation between these dimensions makes it difficult to identify how separate they are from one another, which has significant implications for determinations of the scale's factor structure. Thus, while there may

be theoretical rationalizations for keeping these dimensions distinct, additional work is needed to clarify their differences, utility, and applicability.

The second aim of the study was to investigate the discriminant validity of the CIPS from other conceptually similar constructs. Consistent with predictions, the 4-factor bi-factor CIPS model was found to be considerably discriminable from achievement motivation, locus of control, fear of negative evaluation, John Henryism, minority status stress, perfectionism, self-esteem, and social anxiety. These findings both support and extend findings from previous research. For example, evidence of discriminant validity serves to clarify some of the conceptual boundaries noted within previous research (Bernard & Neblett, 2018), and also provides support to suggest that this is a conceptually distinct construct among Black emerging adults. Moreover, findings were consistent with literature that has identified an association between IP and perfectionism (Thompson, Foreman, & Martin, 2000), self-esteem (Lige et al., 2017), fear of negative evaluation (Chrisman et al., 1995), and anxiety (Cokley et al., 2017). This study was the first however, to illustrate associations with John Henryism, locus of control, and achievement motivations. These relationships are significant as they add support to previous scholarship suggesting that cognitions of IP may dictate coping strategies (Whitman & Shanine, 2012) and achievement motivations (Kumar, 2006).

CHAPTER 4: STUDY 2

In establishing construct validity, longitudinal explorations of structural stability represent an important step yet to be utilized within IP literature. As such, very little is known about how this scale operates over time. Given the inconsistent dialogue surrounding the factor structure of this scale, and the increasing literature that has begun to examine IP within longitudinal frameworks (Bernard et al., 2018, 2017), there is an immediate need to elucidate the longitudinal stability and accuracy of the CIPS. Accordingly, the purpose of this study is to determine the extent to which the CIPS remains invariant over time.

Method

Participants. Participants were drawn from a preexisting longitudinal dataset examining Black health and life experiences. Participants who took part in this study were Black first-year students at a midsize, public, southeastern, predominantly White university in the United States who were recruited from a list of incoming first-year students provided by the university registrar. To be eligible to participate, students had to be a college student at the university where the study was conducted, be at least 18 years of age, and self-identify as Black. Data were collected from two successive cohorts of first-year students. This dataset consists of four waves of data with a semester-interval of approximately eight months between each wave.

The sample overall sample was comprised of 157 students; 107 females (68.2%) and 50 males (31.8%): Cohort 1 (N = 84; 53.5%) with an average age of 19.12 years (SD = 0.45; age range = 18–21), and Cohort 2 (N = 73; 46.50%), with an average age of 18.07 (SD = 0.25; age range = 18–19) at Wave 1. Cohort 1 consisted of 57 females (67.9%) and 27 males (32.1%),

whereas Cohort 2 consisted of 50 females (68.5%) and 23 males (31.5%). Cohort 1 was slightly older than Cohort 2 ($p < .001$), but the cohorts did not differ with respect to maternal educational attainment (indicator of SES), gender composition, or IP.

The median highest maternal educational attainment was "Bachelors or 4-year college degree," and representation of self-reported family SES included 7.6% poor, 19.7% working class, 51.0% middle class, 21.0% upper middle, and 0.6% wealthy. Approximately 80% of students were in-state students, 91.7% were born in the United States, 29.9% were first-generation college students, and 68% described their family structure as "two parents." Self-reported cumulative average was 2.81 ($SD = 0.51$). Family SES, first-generation student status, and family structure were similar between cohorts.

Measures

Impostor Phenomenon. The CIPS described in Study 1 was the primary measure used in this study.

Data Analytic Plan

Measurement invariance analysis was conducted in Mplus 8 to investigate the longitudinal stability of the CIPS factor structure identified in Study 1. Longitudinal measurement invariance represents a common statistical technique employed to assess whether the structure and parameters of a measurement model are equivalent over time (Byrne, Shavelson, & Muthén, 1989). Longitudinal factorial invariance is addressed in three stages using CFA and chi-square difference tests: configural factorial invariance, weak or metric factorial invariance, and strong or scalar factorial invariance.

Briefly, *configural invariance*—a precondition for weak and strong invariance—corresponds to a measurement model (i.e., CIPS) having the same structure of free and fixed parameters while imposing no equality constraints on the factor loadings and intercepts across

the three waves of data. That is, configural invariance is established when the same measurement model demonstrates adequate fit over time within a particular sample when the pattern of free and fixed parameters are the same at each time point. If configural invariance is established, it can be assumed that similar latent variables are being measured at each time point, and that weak invariance can be tested. *Weak or metric invariance* assesses model fit over time by constraining factor loadings to be equal across each wave of data. If weak measurement invariance is established, it can be determined that all items are measuring the construct in the same way across time. Following the establishment of weak invariance, strong variance can then be assessed. Within *strong or scalar invariance* testing, factor loadings and intercepts of observed indicators are constrained to be equal for all items across time. Thus, if strong invariance is established, then meaningful comparisons at the mean level can be made, as the instrument is being measured the same way, using the same metric, and starting from the same measurement point.

As a precursor to this step-wise analysis, it is necessary to first examine model fit and item configuration within each wave of data to determine if invariance analysis is appropriate for the data. If model fit is found to be acceptable at each time point and items demonstrate similar configuration at each wave, then the aforementioned collective analyses can be conducted. However, if model fit and/or item configuration are deemed unacceptable at any time point, this can be interpreted as a sign of measurement variance, and analyses cannot move forward (Vandenberg & Lance, 2000). If model fit is determined to not be appropriate for invariant analyses, I will then diagnose issues with the scale by conducting exploratory bi-factor analyses (bi-EFA) in efforts to identify a factor structure appropriate for invariance testing. Bi-EFAs serve the same function as traditional exploratory factor analyses (EFA) in that it relaxes the a priori

requirements to specify an explicit structure, but within a framework that accounts for high correlations between latent variables by parsing out item response variance from the general factor (Jennrich & Bentler, 2011).

Results

The primary aim of this study was to investigate measurement invariance for the CIPS over four waves of data. More specifically, tests of invariance were conducted to evaluate the longitudinal stability and generalizability of the CIPS bi-factor structure found in Study 1. To begin this process, it was necessary to first test the bi-factor model at each wave, to determine if measurement invariance could be conducted. The overall model produced fit indices that were found to be acceptable at each wave of data: Wave 1 $\chi^2(119) = 231.53$, $p < .001$; RMSEA = .08; TLI = .96, CFI = .97, Wave 2 $\chi^2(118) = 185.91$, $p < .001$; RMSEA = .06; TLI = .97, CFI = .98, Wave 3 $\chi^2(118) = 209.26$, $p < .001$; RMSEA = .08; TLI = .97, CFI = .98, and Wave 4 $\chi^2(118) = 180.19$, $p < .001$; RMSEA = .08; TLI = .97, CFI = .97. However, as shown in Table 6, the configuration of items differed substantially at each wave implying a severe violation of measurement invariance. For example, item 3 ("I avoid evaluations if possible and have a dread of others evaluating me") was found to inconsistently load onto the Fake subscale across each wave of data ($p_{wave1} = .06$, $p_{wave2} = <.001$, $p_{wave3} = .34$, $p_{wave4} = <.001$). This pattern was also observed with items 4, 5, 9, 11, and 15. Moreover, despite loading positively at each wave, item 5 ("I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people") produced positive and negative factor loading across the four waves of data ($b_{wave1} = .50$, $b_{wave2} = -.68$, $b_{wave3} = -.50$, $b_{wave4} = .78$), which was also a common pattern with several other items (i.e., items 3, 6, 8, 12, 13, and 15). As illustrated by item 11 ("At times, I feel my success has been due to some kind of luck."), some items were found to cross-load. In light of this poor fitting model, each of the

previous factor structure models examined in Study 1 were also tested within the longitudinal framework to determine temporal stability, and each demonstrated poor fit to the data (see Table 7). For this reason, it was determined that the empirical models were not suitable for testing measurement invariance.

As a potential remedy to this issue, I next conducted EFAs and bi-EFAs to determine if measurement invariance could be conducted within a freely estimated model bi-factor model. More specifically, 1, 2 and 3-factor EFAs, and 2, 3, and 4-factor bi-factor models were conducted to examine if any improvement in model fit and item configuration could be steadily identified over the four waves of data[1]. As shown in Table 8, the 1-factor EFA did not fit the data well across any of the time points: Wave 1 $\chi^2(135) = 339.65$, $p < .001$; RMSEA = .10; TLI = .93, CFI = .94; Wave 2 $\chi^2(135) = 302.59$, $p < .001$, RMSEA = .10; TLI = .95, CFI = .95, Wave 3 $\chi^2(135) = 347.52$, $p < .001$; RMSEA = .12; TLI = .94, CFI = .95, and Wave 4 $\chi^2(135) = 323.61$, $p < .001$; RMSEA = .12; TLI = .91, CFI = .92. While improving fit relative to the previous model, the 2-factor model also was found to not produce consistently acceptable fit indices across the four waves of data: Wave 1 $\chi^2(118) = 247.28$, $p < .001$; RMSEA = .08; TLI = .95, CFI = .96, Wave 2 $\chi^2(118) = 227.55$, $p < .001$, RMSEA = .08; TLI = .96, CFI = .97, Wave 3 $\chi^2(118) = 260.59$, $p < .001$; RMSEA = .11; TLI = .95, CFI = .97, and Wave 4 $\chi^2(118) = 231.10$, $p < .001$; RMSEA = .10; TLI = .94, CFI = .95. Finally, the 3-factor EFA model was found to produce acceptable fit across each wave: Wave 1 $\chi^2(102) = 182.69$, $p < .001$; RMSEA = .07; TLI = .96, CFI = .98, Wave 2 $\chi^2(102) = 177.66$, $p < .001$, RMSEA = .07; TLI = .97, CFI = .97, Wave 3 $\chi^2(102) = 171.49$, $p < .001$; RMSEA = .08; TLI = .97, CFI = .98, and Wave 4 $\chi^2(102) = 159.93$, p

[1] Items 1-2 were removed from analyses as they did not consistently load onto any of the specified factors within the analyses.

< .001; RMSEA = .08; TLI = .96, CFI = .98. Although the 3-factor EFA was found to fit the data well, several items were found to behave in an unstable and inconsistent manner across the four waves. As noted within Table 9, some items were found to cross-load onto multiple factors. An example of this cross-loading can be seen with item 15 ("When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success"), which was found to load significantly onto multiple factors at several time points. Moreover, other items were found to significantly load onto a specific factor at one time point, and a different factor at a later time point. An exemplar of this pattern can be found in item 12 ("I'm disappointed at times in my present accomplishments and think I should have accomplished much more"), which was found to load strongly (>.40) on different factors across each wave of data. In light of these results, the 3-factor model structure was also deemed to not fit the data well over time.

In light of the poor fitting basic EFA models, three bi-EFA structures were also tested (see Table 10). For the 2-factor bi-EFA model (general factor and one subfactor), fit indices were indicative of poor fit over time: Wave 1 $\chi^2(118) = 247.28$, $p < .001$; RMSEA = .08; TLI = .95, CFI = .96, Wave 2 $\chi^2(118) = 227.55$, $p < .001$, RMSEA = .08; TLI = .96, CFI = .97, Wave 3 $\chi^2(118) = 260.59$, $p < .001$; RMSEA = .11; TLI = .95, CFI = .97, and Wave 4 $\chi^2(118) = 231.10$, $p < .001$; RMSEA = .10; TLI = .94, CFI = .95. In contrast, the 3-factor bi-EFA model was found to yield good fit statistics across each wave: Wave 1 $\chi^2(102) = 182.69$, $p < .001$; RMSEA = .07; TLI = .96, CFI = .97, Wave 2 $\chi^2(102) = 177.66$, $p < .001$; RMSEA = .07; TLI = .97, CFI = .98, Wave 3 $\chi^2(102) = 171.49$, $p < .001$; RMSEA = .08; TLI = .97, CFI = .98, and Wave 4 $\chi^2(102) = 159.93$, $p < .001$; RMSEA = .08; TLI = .96, CFI = .98. Finally, the 4-factor bi-EFA model illustrated the greatest improvement in model fit with indices illustrating excellent fit across the

four waves of data: Wave 1 $\chi^2(87) = 143.73$, $p < .001$; RMSEA = .06; TLI = .97, CFI = .98, Wave 2 $\chi^2(87) = 145.28$, $p < .001$; RMSEA = .07; TLI = .97, CFI = .98, Wave 3 $\chi^2(87) = 140.24$, $p < .001$; RMSEA = .08; TLI = .98, CFI = .99, and Wave 4 $\chi^2(87) = 113.96$, $p < .001$; RMSEA = .06; TLI = .98, CFI = .99.

Despite the promising fit indices produced by the 3 and 4-factor bi-EFA models, a range of item configuration problems were found. As shown in Tables 11 and 12, each of the bi-EFA models had numerous items that evidenced instability in their fit, loaded negatively, or cross loaded at each wave of data. For example, within the 3-factor bi-EFA model, item 16 ("If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done") was found to vary in the extent to which it significantly loaded onto the general or subfactors across each wave of data. Moreover, item 12 ("I'm disappointed at times in my present accomplishments and think I should have accomplished much more") was found to load positively on a specific subfactor at one wave of data, and negatively at others. Comparable issues were observed within the 4-factor model. Item 6 for example ("I'm afraid people important to me may find out that I'm not as capable as they think I am") was found to negatively and significantly load onto the general factor and a specific subfactor, but only within three out of the four waves of data. Moreover, item 8 ("I rarely do a project or task as well as I'd like to do it") was found to load significantly onto a different subfactor in three of the four waves of data. Furthermore, within both models several items were not found to load significantly on the general factor, and several items were found to not load well within Wave 4. These problems persisted after removing items, fitting alternative models from Study 1, and consulting with statistical experts. Given that a stable model structure could

not be identified within the data, the structure of the CIPS was determined to be longitudinally variant, and therefore unsuitable for invariance testing.

Discussion

The purpose of this study was to elucidate the factorial stability of the CIPS through a measurement invariance framework. Analyses revealed that the 4-factor bi-factor model found in Study 1 did not generalize to the current sample. Moreover, the CIPS was found to violate assumptions of invariance, as there was substantial instability in the factor structure and item configuration at each wave of data. Together, these findings support predictions of invariance and suggest that the CIPS may not measure IP (or its possible sub dimensions) in the same way across time.

One unique contribution of this study is that it is the first to investigate the factorial stability of the CIPS over time. While several studies have cross-sectionally examined the factor structure of the CIPS, findings from the current study paint a different picture and suggest that this "snapshot" approach may be misleading. More specifically, when examined over time, neither the 4-factor bi-factor model nor any of the other identified factor structures were found to consistently fit the data well. Given the instability and general disagreement in the literature regarding the factor structure of the CIPS, it was not surprising that the empirical factor structures failed to generalize to the current sample.

In making sense of why the CIPS was not found to produce a stable factor structure, it could be that cognitions of IP may not be stable and may fluctuate based on an individual's particular set of contextual circumstances. As such, it is possible that cognitions of IP may intensify in settings or circumstances in which an individual's race is more salient. Underscoring this point, Booker (2006) noted that "By virtue of their minority status, African American students can be more sensitive to environmental incongruence" (p. 3). In line with research

suggesting that IP may intensify as individuals transition into new roles (Clance et al., 1995; Lane, 2015; McElwee & Yurak, 2007), one could imagine that as Black students transition into more autonomous and/or less diverse spaces, cognitions of IP may intensify. However, research also suggests that IP may also oscillate as a function of one's familiarity and self-perceived ability within any given setting (Craddock et al., 2011). Thus, as students become more familiar with these novel contexts, they may also find more adaptive ways to remedy their distorted self-perceptions of intellect that give rise to IP cognitions. For example, involvement within minority serving student organizations has been shown to bolster minority student adjustment to PWIs, by offering support and socialization and culturally specific ways (Museus, 2008). Similarly, the development of close family-like relationships (e.g., fictive kin) and community involvement (e.g., church attendance) have been shown to benefit the academic persistence of Black students attending HBCUs (Brooks & Allen, 2016). Therefore, consistent with the developmental nature of IP (Bernard & Neblett, 2018; Clance & Imes, 1978), cognitions of intellectual incompetence may fluctuate and evolve as individuals matriculate through college or other stressful and evaluative contexts.

As alluded to within Study 1, an alternative explanation that may help to make sense of this factorial instability is that there may be potential issues with items included within the CIPS that compromise its ability to produce a stable factor structure over time. Exploratory analyses found that Black students endorsed some items (e.g., item 19: "If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell others until it is an accomplished fact") more than others (e.g., item 9: "Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error"), which is consistent with a similar response pattern in which students endorsed down-playing their success more than a belief in luck

articulated in recent literature (Bernard et al., 2018). On its own, this discrepancy at one time point could be interpreted by some as a problematic, as it suggests that some items may not be serving their intended function in capturing IP cognitions. Yet, student endorsements on the CIPS across the four waves of data indicated that items 9 ("Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error") and 11 ("At times, I feel my success has been due to some kind of luck") were endorsed at a lower rate than any of the other scale items. Taken together, this general pattern could be signaling that something about broad luck-based attributions are not germane to cognitions of IP among Black students, which could have implications for its factor structure.

CHAPTER 5: STUDY 3

Study 3 was developed to supplement findings from Study 1 and 2 by elucidating how Black students discuss and make sense of IP. This qualitative inquiry represents a crucial aspect of establishing construct validity of the CIPS, as information gleaned from student interviews will provide invaluable insight into the nature of IP among Black students. Collecting student narratives related to IP will allow us to compare and contrast how the traditional conceptualization of IP (and subsequent measures) maps on to the experiences of Black students. Thus, the purpose of this study was to shed light on the extent to which student narratives of IP converged or diverged from the traditional multidimensional conceptualization of this construct.

Method

Participants. Purposeful sampling was used to select participants for the qualitative component of the current project. "Purposeful sampling focuses on selecting information-rich cases whose study will illuminate the questions under study" (Patton, 2002; p. 230). Accordingly, the students who had the highest mean IP score in Study 1 and indicated interest in participating in the qualitative study were recruited to participate in this portion of the project. In line with sample size recommendations put forth from phenomenological studies (e.g., Creswell, 2013), eight students in total were recruited, four from PWIs and four from HBCUs. There was an even split in gender such that four males and four females participated (i.e., two males and two females from HBCUs and PWIs). The participants' ages ranged from 19 to 25 years old. Table 13 presents a descriptive demographic profile of the participants that were included in this study (e.g., GPA, major, class year), in addition to their mean IP score.

Materials.

***Sociodemographic information*.** Given prior knowledge suggesting that these are important variables to consider in the context of IP, students were asked to complete several sociodemographic items including age, socioeconomic status, sex, race/ethnicity, grade point average, class year, major, racial composition of their institution, and first generation status.

In-depth interviews. An in-depth interview can be defined as a conversation designed to elicit depth on a topic of interest (Guest, Namey, & Mitchell, 2012). Interviews focused broadly on how Black students define and make sense of IP. Each interview used a semi-structured interview guide (see appendix C), which featured several open-ended questions pertaining to how Black students talk about different components of IP. By using an interview guide, I ensured that each participant was asked the same set of questions, with probes being inserted as necessary. To facilitate discussions of IP, in-depth interviews also included a modified version of a vignette used by Lane (2015) that described an individual experiencing IP in an academic setting (see appendix D). The purpose of this vignette was two-fold. First, it served as a mechanism to familiarize participants with IP if they were unaware of this construct already. Second, the vignette served to normalize and encourage participants to speak about IP cognitions that scholars argue to be "a private, internal, emotional experience" (Lane, 2015, p. 9).

Procedure. Following the conclusion of data collection for Study 1, data were reviewed to identify participants who scored the highest in IP. These scores were then crossed referenced with individuals' preferences to be contacted to participate in individual interviews. Students with the highest mean IP scores and who indicated "yes" to being contacted were sent an email requesting their participation. Participants interested in taking part in the interview were then emailed a brief demographic form to complete. At the time of interview, participants were first informed of the purpose of the study and then asked to provide a verbal consent. Following

consent, individual interviews lasted between 35-50 minutes. At the conclusion of the interview participants provided consent to be contacted in the future with follow-up questions, debriefed, and compensated $25 for their participation. All interviews were conducted by the primary investigator (an African American male), and were conducted either in person or via GoToMeeting, a virtual meeting platform similar to that of Skype. All interviews were audio-recorded.

Analytic Plan

Interview data. How does the way in which Black students speak about IP align or diverge with the original themes posited in its original conceptualization and measurement? To shed light on these questions, three sub questions guided my qualitative inquiry: 1) What is the nature of IP among Black college students?; 2) How do Black students describe cognitions of IP?; and 3) How do Black students make sense of IP? To address these questions, interview data were collected and analyzed using standard qualitative procedures and techniques for coding and developing themes (e.g., Creswell & Plano Clark, 2007; Guest, Namey, & Mitchell, 2013). I approached data analysis in a formulaic manner which consisted of the following steps: (1) transcription of the individual interviews; (2) preliminary exploration of the data by listening to audio recordings of interviews, reading through transcripts, and writing brief notes (i.e., memos); (3) coding the data with a graduate student research assistant using pen and paper and qualitative software (i.e., ATLAS.ti; Muhr & Friese, 2004); (5) exploring the codes to create themes through aggregation and specification; and (6) connecting and interrelating themes to form a narrative that answered the research aims. Each of these steps is discussed in detail below.

Verbatim transcription was completed by a transcription service company (see appendix E for sample transcript template). Following transcription, I read through each interview in order to gain a preliminary understanding of the textual data and to address any concerns (e.g., missing

data points, correcting transcript issues). Memos (short notes) were drafted as needed throughout this process to assist in processing and making sense of the data. Following data preparation, the coding process took place. Coding is among the most critical aspects of any qualitative study (Creswell & Plano Clark, 2007). Data were coded using a combination of manual and in-vivo coding techniques (using textual interpretive software, i.e., ATLAS.ti). For this project, codes are small units of text (e.g., phrases, sentences, paragraphs) that are assigned labels. Throughout the coding process, the principal investigator worked in tandem with a research assistant to identify and refine coding labels, with similar codes being grouped together into broader themes. This refinement process continued until a final set of representative themes were deemed satisfactory by the research team (i.e., no new themes were capturing new information).

Transcription. All interviews were transcribed verbatim using an online transcribing service (i.e., Rev.com). Quality assurance for the transcripts was established in three ways. First, I read over each transcript while also listening to the audio interview, correcting any errors or misheard information when necessary. Second, I read over the transcript again without the audio files. Third, I read each transcript a final time with the audio file to establish that everything that was stated in the interview was accurately represented in the text. All transcribed interviews were organized using transcription headings to provide information on the date of interview, transcriber, and initials for each speaker (Mack, Woodsong, McQueen, Guest & Namey, 2005).

Preliminary data exploration and manual coding. Following the establishment of transcription fidelity, I read each interview (in chronological order of the interview date) and created a brief personalized memo as a means to refresh myself with the main themes raised by each individual (Saldaña, 2009). Each memo built upon the next, such that as I read through each interview in succession, I began to refer to previous interviews and link themes via reminders in

the memos. Similar to that of quantitative research, qualitative findings need to be validated (Creswell & Plano Clark, 2011). Thus, in order to ensure that I remained objective in this process, a research assistant was recruited to read, memo about, and code the first three interviews conducted. Memos and codes were compared and contrasted until an initial codebook was developed.

Following this process, I undertook an initial round of coding via manual coding. Initially, this was a two-step process wherein the research assistant and I coded the same transcript separately to ensure that I remain unbiased in the coding process. After our independent coding was completed, we met to compare the similarities and differences in our coding. Within this first cycle of coding, we primarily utilized Descriptive, In-Vivo, and Process coding. In short, descriptive coding involves using words or short phrases to approximate the main topic of a subset of text (Saldaña, 2009). Descriptive codes were often used to capture students' descriptions of IP (e.g., Luck). In-vivo coding uses quotations that emerge directly from the text as codes (e.g., "*One of the only*"). Process coding uses gerunds to code action in the text (e.g., Feeling undeserving). Where appropriate, these coding types were combined to capture the interplay between codes, for example descriptive and process codes (e.g., High expectations: Refuting Stereotypes).

In addition to coding manually, data were also coded in ATLAS.ti version 7. Computer Assisted/Aided Qualitative Data Analysis (CAQDAS) is a useful coding resource that can make the process of analytic reflection easier (Saldaña, 2009). Given that this was my first time using rigorous qualitative coding techniques, CAQDAS was a helpful tool that provided an opportunity for me to see the overlap of codes combined with my desire to observe categories and themes in a more concrete way. After transferring the codes of the initial three interviews to ATLAS.ti, the

remaining five interviews were coded entirely through use of CAQDAS. Similar to the manual coding process, I completed analytical memos for each, linking common themes to previous interviews (see Appendix F for Memo examples). During this period, some codes were combined, some removed, and at times new codes were generated.

Identifying major themes. After the initial round of coding, I conducted a second cycle of coding that focused on consolidating similar codes into distinct categories. After recoding, I used the Code Families function in ATLAS.ti to create subthemes that appeared to emerge from the focused codes.

Philosophical Assumptions. Prior to delving into the results, it is important to discuss the philosophical worldview of the principle investigator, and its suitability for data collection and analyses. Based on recommendations offered by Creswell and Plano Clark (2011) and DeCuir-Gunby and Schutz (2016), I approached this study from a pragmatic or pluralistic worldview, which centers around the notion of using the best available method(s) to investigate the research question of interest. A pragmatic worldview is commonly approached from a universalist perspective that recognizes that there may be many different realities that center on basic "truths" which may differ by individual processes and context (DeCuir-Gunby & Schutz, 2016). As an example, empirical evidence suggests that cognitions of IP are prominent among Black students (e.g., Austin et al., 2009; Bernard et al., 2017); however, the way in which Black students discuss and make sense of IP may differ as a function of one's own lived experiences within a particular context. Thus, although the relevance of IP among Black students is understood, the way in which these students talk about this experience remains unclear.

Results

How does the way in which Black students speak about IP align or diverge with the original themes posited in its original conceptualization? To answer this question, my analyses

were guided by three sub questions: 1) What is the nature of IP among Black college students? (i.e., do Black students experience IP); 2) How do Black students describe cognitions of IP? (i.e., How do Black students discuss and describe IP); and 3) How do Black students make sense of IP? (i.e., why do Black students think they experience such cognitions?). The major emergent subthemes, focused codes (i.e., codes that emerged from the second analytic coding cycles), and textual support is presented by research question. Table 14 contains a summary of subthemes and focused codes by research question.

Nature of Impostor Phenomenon. In order to understand the nature of IP among Black students, each interview included a brief passage for participants to read that presented a fictitious vignette that described an individual who experienced symptoms related to IP (see appendix D). The purpose of this vignette was to ensure that participants understood IP as traditionally conceptualized and to elucidate similarities and differences in their own experiences. Following the presentation of this vignette, students were then asked to discuss their own experiences and how they may be similar or different from the example. Most individuals reported resonating with the experiences presented within the vignette (n = 6). For example, after reading the vignette, one female student stated the following:

> *I really related to the end portion where it's talking about he was feeling like a fraud or feeling like he faked or tricked someone into thinking that he's a successful college student…And you know also just having that fear that eventually people will discover that he's not all that he appears to be. (IS)*

A similar agreeable response can be gleaned from another female, who related the vignette to her own feelings regarding her academic ability and performance:

I felt like his experiences were relatable because you know, I'm someone who came from Rhode Island College and I received A's and B's in most of my classes. But I still kind of felt like I wasn't, like how did I receive the good grades even though like I'm having all this trouble with school?... it makes me feel like that 3.6 that I earned wasn't really much of anything. (KF)

Similar sentiments were echoed by a male student, who reported that the vignette captured many of his own experiences:

I feel like that definitely relates to me. Like it hits 95%. (SJ)

In the above examples, as in others, students expressed familiarity with personal experiences with IP cognitions. Further exploration of responses to this vignette revealed a focus code "*Dissonance*", wherein individuals described a trademark experience of IP—the paradoxical cognitions of intellectual incompetence despite evidence of objective success. One example of this experience can be seen by a female student describing her time at a high profile internship:

Yeah, it was, it's strange, but I felt like it was almost by accident that I got the position, even though I was qualified and probably over qualified. I don't know I just felt inadequate at times, but I was very successful in my time there, despite feeling that way at times. (AC)

Despite the majority of participants reporting familiarity and personal experiences of IP, a small number of students denied resonating with cognitions of IP (n = 2). In response to the prompt, one male individual contrasted his own beliefs and feelings depicted in the vignette:

I know that I got myself here, and I'm fully capable of putting in the time and the effort to actually producing good work in plenty of time. I know if I fail something, or do get a bad

grade, I like to focus on contributing it to the fact that it was the effort that I put into it, and not the fact that I'm not even supposed to be here and I'm just like an impostor. (CW)

Meaning of Impostor Phenomenon

In addressing the next question, how do Black students describe cognitions of IP, a pattern of responses emerged that closely resembled the multidimensional nature of the CIPS. More specifically, many of the responses from participants corresponded to the Luck, Fake, and Discount dimensions of the CIPS. As such, three focused codes were developed to capture each of these patterns respectively: "Feeling lucky" described participant tendencies to attribute success and achievements to luck or chance. "Discounting ability" referred to the propensity for participants to diminish their own intellectual ability by attributing success to factors outside of their control. The third focus code, "Feeling Fraudulent" centered on participant beliefs of intellectual incompetence and fears that their self-perceived inadequacies would one day be "figured out".

Feeling Lucky

The majority of participants (n = 5) discussed the relevance of luck when discussing their success and achievements. These luck based attributions took three distinct forms. The first form was delineated by the code of "general luck" in which participants articulated that luck and good fortune played a key role in their success: "*I feel like most situations I get into are because of luck" - MT*. Interestingly, many participants also described similar luck based cognitions in situations where they were successful and their peers were not (e.g., passing a difficult course, being the first to attend college). As one female student noted: *"I would just like for everyone to succeed, so when everyone's not succeeding, I feel like "Wow, maybe I'm just the lucky person of that." –KF*. The communalistic nature of this student's response was not an isolated response. As

seen by a male participant discussing how he feels about being successful when his peers are not, such luck based attributions are commonplace for some students:

> *I would say when you see a lot of people who are not doing good. Then you look at yourself like, dang I'm in a kind of better situation than them. I could've been in their situation. Like, that's when I feel like, yeah maybe luck does play a part… (SJ)*

In addition to the general feelings of luck observed within interviews, participants also described feelings that their success was the product of chance and error. More specifically, some students expressed believing that that their achievement was "random" or "by accident". This general pattern can be seen by a female student who described her reaction to being first admitted to college:

> *I guess from the beginning I was just kind of like…I know that I did everything that I needed to do to be able to like be accepted, and even so I still had that idea in my mind like oh it was just like random or that sort of stuff. (AC)*

Feeling Fraudulent

Half of the participants reported cognitions of fraudulence or inauthenticity that correspond to the Fake dimension of the CIPS. In particular, students expressed perceiving themselves to be "undeserving" of the success they had received, as if they were "not supposed to be" in their current situation, and concerned that they would be eventually "figured out". Take for example, a student who spoke about her experiences working at a high-profile hospital with the company CEO during a summer internship:

> *I felt honored. I also felt, I can't remember exactly what the theory is called, but it's when you're not actually as qualified as you're supposed to be. You kind of feel like people are going to eventually figure you out. (IS)*

As a result of these concerns, some participants voiced intentionally not sharing accomplishments and success in fear that their self-perceptions of fraudulence would be validated by others.

> *When I got into UNC, even now that I'm at UNC I don't even really like to talk about it with people because I feel as though they won't believe me or they'll think I'm undeserving of this achievement and already think that I'm undeserving of it, so I don't want to give someone else leeway to also tell me that I'm undeserving of it. (KF)*

As seen from the examples above, students who expressed cognitions of fraudulence or phoniness may have the tendency to consciously conceal or hide achievements in order to avoid having their negative cognitions (e.g., feeling undeserving of success) reinforced or confirmed by others.

Discounting Ability

In addition to expressing feelings of luck, most participants (n = 5) also voiced discounting their ability, despite being objectively successful academically and/or professionally. Discounting took many forms that aligned with the traditional conceptualization of IP and included general feelings of self-doubt (e.g., "*I do doubt my abilities*"- *KF),* "minimizing" positive feedback related to accomplishments (e.g., "*you know people see something that I don't, even after getting compliments or people expressing their confidence in my work" -IS),* perceiving peers to be "more talented" (e.g., "*we do feel like our peers are a little bit more talented than we are"- CF),* and "*just because*" attributions in which success was credited to external rather than internal factors which can be seen by this male's comments about being selected to work on a competitive documentary that several people within his department applied for:

The documentaries were just because I got an email through the communication department… that kind of thing has nothing to do with [my] abilities at all, they just kind of send out like mass, um, emails to everyone (MT).

In the aforesaid example, the male student can be seen discounting his ability by minimizing the significance of his documentaries and also attributing his accomplishment to external factors (i.e., mass emails). Though responses such as this were largely consistent with the way in which scholars conceptualize the discounting dimension of IP, a notable and unique set of responses emerged that have yet to be discussed within the context of discounting success.

In probing responses, several students (n = 4) posed questions or made comments relating to their own race or minority status that appeared to discount the meaning or significance of their accomplishments. As such, a unique focus code that emerged to capture this form of discounting ability was the concept of "*racial attributions*". In some cases individuals discounted the significance of their success by questioning the role of race-related quotas:

I wonder if there is any accuracy in the little comments that are made. Like did I only get this because I'm an African American and you all have to meet a quota? (IS)

Others could be seen questioning the legitimacy of their success due to suspicions that their hiring was due to their employer prioritizing diversity over actual qualifications and intellect:

There's like a 120 or so people that applied, so I didn't know like how they chose people…there is like a diversity element of it, like they want it to be an inclusive space. So I guess my suspicions were like, this is kind of like a false thing. (MT)

Whereas the previous examples alluded to more institutional level race-related factors (i.e., potential race-related hiring practices) as the reason for discounting ability, one student noted the

significance of individual level race-related factors (i.e., stereotypes) as the reason that her and her peers perceive themselves as "less capable":

> *We see ourselves sometimes as like less capable because of stereotypes, believing in stereotypes and that sort of stuff, when really like that's not the case at all. (AC)*

Thus, while the traditional characteristics of IP are pertinent among Black students, there also appear to be unique race-related elements that are important to consider.

Making Sense of IP: "A Hard Balance"

To understand the way in which Black students discuss IP experiences, it is important to consider how these students make sense of such cognitions, which is the final question that these interviews sought to address. Several interesting focused codes emerged. The first focused code "*One of the Only*" described students perceived sense of isolation. The second code "*The Looking Glass Effect*" described the propensity for students to view themselves based on how they believe they are perceived by those around them. The third code "*High Expectations/Standards*" described the self-imposed standards that participants intentionally set for themselves to navigate the negative way in which they believe they are perceived by others. Each will be discussed in more detail below.

"One of the Only". In making sense of IP cognitions, several participants expressed feeling like "one of the only" (n = 5). Interestingly, while this phrase was used by many individuals to capture an array of experiences related to race, gender, and first-generation status, they all revolved around feelings of isolation, lack of belonging, and underrepresentation. In most instances, students noted that being one of the only Black individuals in a predominately White context (e.g., school, work) was a prime reason for which cognitions of IP surfaced. As an example, one female student indicated that being the only student of color in a situation, makes her feel as though she is "outlier":

I would say that I think race plays a role in feelings of imposter syndrome in frequently feeling as though as an African American in competitive positions or higher level positions or academic achievement that is like an outlier. That's not the norm or that's not really what's supposed to happen. (IS)

Moreover, a male student expressed similar feelings as he was describing his experiences working at Microsoft:

I definitely feel like I didn't belong there. I don't know. It was just like a predominately white in the office area. I really didn't really see any African Americans like that. (SJ)

Whereas the above examples, and others like it noted the relevance of IP due to feeling racially disconnected and isolated, others expressed these feelings in the context of gender, both separately and in tandem with their race. These feelings were particularly apparent when students spoke about their experiences as a female in a STEM field, which has been traditionally dominated by males. As noted by one student, the salience of being Black *and* female within this context can be particularly inviting to cognitions of IP:

"you already have like one thing against you of being a person of color, but then you have a second thing against you because you're a female. And so like when you think- when you have heard that and you have that in your mind, it's kind of like even more amplifies any feelings of like, oh like you are less, or maybe this is just luck, because you already have that in your mindset…" (AC)

Students also discussed similar feelings with respect to being a first generation college student, such as in the case of one student who recently transitioned to a larger institution from a smaller school:

I would say being in an environment where the majority is not first generation and you are the minority that is a first generation, um, it definitely makes you doubt yourself. Like, you're, you're in an environment where everybody else isn't really like you. (CF)

"The Looking Glass Effect". Directly related to the experiences articulated by the students above is the notion of "*The Looking Glass Effect*", or the ways in which Black individuals believe they are perceived by those who are non-Black. Several students noted this experience in the context of IP, with the majority of students articulating the relevance and impact of stereotypes in their daily lives (n = 4):

I think when I go in the classroom sometimes, or if I'm around a lot of people that are not of color, I think that they see me a certain way that's basically based on stereotypes. (AC)

As noted by another female student, these beliefs are reinforced by comments or questions from non-Black peers that served to discount the accomplishments and success that she has had:

"when I talk about how I got to UNC and you know, someone proceeds to say, "oh, are you an athlete?" And, it's like, why do you jump to that assumption first instead of you know, thinking that I'm actually deserving of the opportunity?" (CF)

The awareness of negative stereotypes represented a significant subtheme that was reported in every interview that was conducted, regardless of if individuals acknowledged IP or not. For instance, one male student who denied experiencing IP, described possessing an awareness of the negative race-related stereotypes that may be held towards him as a result of his race:

For a black individual like me, you know, normally I'm going to be looked down upon because of my ethnicity. (RC)

In line with this notion of stereotype awareness and reflected appraisals, several students voiced feeling that they were perceived by non-Black peers, teachers, and coworkers with extra scrutiny,

and that their actions, behaviors, and performance were perceived as representative of all Black individuals. For this reason, students noted feeling as though they were being viewed "*with a magnifying glass*", having to "*gauge the room*" and "*creating a guard"*, and feeling the need to be "*conscious of everything*", within social, academic, and professional contexts. As noted by one student: "*Everyone is watching. Everyone is watching us. What we do, what we say, and how we do things"—RC*. Accordingly, an additional code "Double Consciousness" was developed to capture what one student deemed to be "*a hard balance",* or the implicit or explicit pressures of representing the entire Black community, while also attempting to navigate college like their non-Black counterparts:

> *Even though I'm not really concerned with what they're thinking, I also don't purposely do things to make them think negatively about like for instance Black people because unfortunately what one of us does, people a lot of times take it as for like what everybody does. So I'm also very conscious of like what I'm doing negativity, how it negatively affects like what people think of black people… (AC)*

High Expectations: Refuting vs. Fear of Confirming Stereotypes. In light of this balance, students expressed feeling an intense pressure to perform well to represent their community, family, and/or racial group in a positive manner. This gave rise to a pattern of responses in which students expressed the need to hold remarkably "*high standards*" for themselves and the need to "*prove myself*" or "*prove them wrong*". At a glance, these pressures to perform well appear to align with the high self-imposed standards traditionally associated with IP. However, in the context of the current study, such standards did not appear to serve the purpose of navigating a compromised self-image as hypothesized by Leary and colleagues (2000). Rather, student's responses continuously revolved around the concerns of confirming

stereotypes, and an interesting dichotomy emerged in probing responses. While some students set high expectations with the intention of disproving or refuting stereotypes, others mentioned that these expectations were in place in fear of confirming those negative stereotypes. As such, it appeared that some students took a more active approach to refute or disprove the negative way in which they believed they were perceived by others, while others took a more passive approach and believed that their high expectations served to allay their fears of confirming negative stereotypes. To highlight this dichotomy, an example of each can be seen below.

> *I have to not remind, but I have to prove, okay, despite what's on my resume this is why I'm here, not because I'm a minority and this was given to me.(IS)*

> *When I make mistakes, it's sort of like expected in a way based on stereotypes…so like when I feel like I do anything less than perfect, then I'm like feeding into a stereotype, which it shouldn't be the case, but unfortunately that's the way it is sometimes. (AC)*

Even students who reported that IP was not germane to their own experiences reported possessing high standards to avoid negative race-related assumptions. For instance, one male student noted that being the only person of color made him set higher expectations to avoid others from attributing his success to that of race:

> *I wanted to prove people wrong, and not like have race as a factor, so I felt like I needed to set higher expectations for myself (CW)*

At a glance, the impetus of these self-imposed high standards illustrated by the aforementioned examples may appear to be different (i.e., motivations to disprove stereotype vs. motivations to avoid confirming stereotypes). However, upon closer examination, these high standards seem to

be in place, in part, to repudiate or shield Black students from the negative ways in which they believe they are perceived by others.

Discussion

The primary aim of the study was to elucidate the extent to which Black student narratives align or diverge with the original conceptualization of IP. In exploring the subthemes relating to the nature of IP among Black students, responses both reinforce and extend our understanding of the ways in which students experience IP. Students overwhelmingly resonated with cognitions of IP in such a way that supports previous literature. As an example, the paradoxical experiences of feeling intellectually incompetent despite objective success was a readily identifiable pattern of responses that was captured by the focused code "dissonance". In fact, emergent focused codes "feeling lucky", "discounting ability" and "feeling fraudulent" strongly paralleled the luck, discount, and fake dimensions of IP commonly referenced within IP literature (Chrisman et al., 1995; French et al., 2008). Given that this study was the first to qualitatively investigate IP within a Black sample, this overlap is significant, as it suggests that at least the basic elements of IP may be generalizable. Thus, while the multidimensionality of IP remains unclear within quantitative literature, it is notable that qualitative explorations continue to find similar patterns of responses (Craddock et al., 2011; Lane, 2015).

Two cogent explanations may help to explain this disconnect in literature. First, the conceptual similarities between the theorized dimensions of IP (i.e., luck, fake, discount) may be difficult to quantitatively disentangle given their interdependent nature. This may help to explain the high correlations between these different dimensions (Brauer & Wolf, 2016; French et al., 2008), and could perhaps, play a role in the empirically documented volatility in the scales structure (Simon & Choi, 2017). As an example of the interdependence among these constructs, one student noted:

I'd say the discounting my ability is a direct result of feelin' like a fraud. Then feelin' like a fraud is a direct result of feelin' like I lucked up for the position, so I think that they all play off of one another and kinda have a little triangle goin' on there. (IS)

Alternatively, it could also be that the CIPS may not be sensitive enough to consistently capture the nuanced responses to delineate the separate, yet, related dimensions of IP, particularly among Black emerging adults. Given that the CIPS has not been updated since its inception over three decades ago, it is possible that the various psychometric, item, and factor level issues reflect its dated nature and need for revision in order to be used within groups other than the high achieving White women it was initially created for.

While the core tenants of IP appeared to generalize to Black students, it is important to highlight the unique findings that emerged from student narratives. First, analyses revealed that there were several novel ways in which Black students discussed IP that has yet to be identified within the literature, and that do not map onto current items within the CIPS or any other measure of this construct. As an example, many students reported that the lack of representation both within and outside of the academy served as a key risk factor for IP cognitions. Furthermore, some Black students were found to use their race as a means to discount their ability (e.g., racial quotas, diversity requirements), and others were found to report the prevalence and internalization of negative stereotypes as primary reason for feeling intellectually incompetent or "less capable" relative to their White peers. Finally, while several students endorsed possessing high self-imposed standards (a common characteristic of IP), many discussed that the function of these expectations were to positively represent their family/community and to offset the negative societal perceptions of Black people, rather than to protect a fragile sense of self as originally argued in the literature.

The fact that students are discussing their experiences of this construct in novel ways confirms arguments made in previous research that posit that IP may be experienced differently among ethnic and racial minority group members relative to their White peers (Bernard et al., 2018; Ewing et al., 1996). These findings are perhaps not surprising given the dated nature and original intent of the CIPS (and other extent measures of IP) to capture IP among high achieving White women. Nevertheless, these results provide concrete evidence to illustrate that current measures of IP are not completely capturing the experiences of Black students (and other racial and ethnic minority groups). As such, it is possible that our understanding of IP among Black students is limited, as current measures may actually be underestimating its prevalence. Therefore, in order to provide a more accurate depiction of IP among Black students, there is an immediate need to update measures like the CIPS to better align with their experiences.

The second finding that emerged from this study is that a common thread that connected student narratives of IP was the omnipresent salience of their marginalization and underrepresentation. While experiences of oppression, discrimination, and stereotypes have been referenced in the past as one of many secondary factors that may reinforce cognitions of IP (Clance, 1995), results from recent literature suggest that these factors may play a more central role in modulating IP experiences among Black individuals (Bernard et al., 2017; Cokley et al., 2013; McClain et al., 2016). In line with this hypothesis, results from the current study found that Black students couched their cognitions of IP within the saliency of their minority status and societal expectations and perceptions of their success (i.e., "*one of the only*" and "*looking glass effect*").

Both qualitative and quantitative work has found that experiences of isolation and underrepresentation may predicate cognitions of IP among students of color (Craddock et al.,

2011; Lige et al., 2017; Peteet, Brown, et al., 2015). As found in previous research, the burdens associated with possessing a token status may include being perceived in more stereotypic ways (Cohen & Swim, 1995), which can have significant negative psychological implications (Kanter, 1977; Postmes & Branscombe, 2002). By virtue of their token status, many students expressed feeling an increased visibility ("*magnifying glass"*) within contexts that were predominantly non-Black, and subsequent pressures to positively represent the Black community while simultaneously disconfirming negative stereotypes. Accordingly, the self-imposed "*high standards*" that students discussed, appeared to be directly related, and in part, driven by desires to "disprove" direct (e.g., discrimination, stereotypes) and indirect (e.g., underrepresentation) messages of intellectual inferiority transmitted by the broader society.

As such, it is possible that the anticipatory stress of potentially not meeting these standards (consequently construed as confirming negative stereotypes) may serve as a precursor for the flagship cognitions of IP, in addition to other well-known phenomena (e.g., stereotype threat). This would be consistent with work conducted by McClain and colleagues who positioned IP within the context of Spencer's phenomenological variant of ecological systems theory (PVEST; Spencer, 1995), which suggests that identity development (i.e., IP) is shaped by abilities to understand and navigate societal expectations, stereotypes, and biases. That is, the ways in which individuals perceive themselves may be directly influenced by the way in which they believe they are perceived by the broader society. In line with these findings, research suggests that Black individuals may appraise their own abilities based on how they believe they are perceived by others (Bachman, O'Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011) and that possessing an awareness of one's stigmatized status may increase risk for IP (Cokley et al., 2015).

As evidenced by student narratives, the awareness of one's stigmatized status may be particularly relevant and psychologically detrimental for Black females who may be at an increased risk for IP given their "double jeopardy" status (Beal, 1969), or possessing two marginalized identities (i.e., being Black and female). Interestingly, while all four females in the study were found to discuss IP as being relevant to their own experiences, only two of the males interviewed reported personal experiences of IP. One possibility to explain these interesting gender differences is that IP may resonate more with female experiences. This is plausible given that IP was originally conceptualized to describe the feelings and cognitions of intellectual fraudulence reported by women (Clance et al., 1995; Clance & Imes, 1978; Clance & O'Toole, 1987). In line with this possibility, several studies have found females to endorse IP at a higher rate than males, which may be partially attributed to differences in gender socialization (Cokley et al., 2015). Alternatively, given the qualitative nature of the study, participants were required to discuss sensitive information in a fairly vulnerable manner. Research has illustrated that women may be more likely to show greater emotional expressivity than males (Chaplin, 2015), and as such may be more comfortable discussing and disclosing information that some may deem more personal and emotional evocative (i.e., IP).

In sum, while there is certainly overlap that exists, there appear to be unique experiences within the lives of Black emerging adults that drive IP cognitions that are related to their marginalized identity (e.g., racial attributions, lack of representation, reflected appraisals). Moreover, while relevant within both Black male and female college students, the prevalence of IP may be particularly harmful among females. Taken together, these findings suggest that the way in which IP is discussed in the literature may overlook unique race-related factors that may

undergird cognitions of intellectual incompetence among Black emerging adults. Accordingly, the CIPS as currently written may provide an incomplete picture of IP among students of color.

CHAPTER 6: DISCUSSION AND CONCLUSION

The overarching goal of this project was to systematically examine the construct validity of IP among Black college students. To do this, a multi-study approach in which different methods and samples were utilized. The purpose of this research design was to broadly investigate and triangulate the validity of IP through quantitative and qualitative designs that utilized cross-sectional and longitudinal analyses. The objective of the first study was to examine the factorial and discriminant validity of the CIPS among Black students. The objective of the second study was to examine the longitudinal measurement invariance of the CIPS. Finally, the objective of the third study was to understand the nature of IP among Black students through qualitative interviews.

Four key findings emerged from the data that provide valuable insight regarding the construct validity of IP. First, no empirical factor structure of the CIPS was found to generalize within the current study. However, a novel bi-factor model was found to describe the factor structure of the CIPS cross-sectionally. Second, IP was found to be distinguishable from conceptually similar constructs. Third, when examined over time, none of the previous factor models hypothesized in the literature, including the bi-factor model found in the current study, were found to adequately describe the factor structure of the CIPS. Finally, qualitative results suggested that while the CIPS may capture traditional elements of IP among Black students, it also may overlook experiences associated with one's minority status that play a primary role in shaping and exacerbating cognitions of self-perceived intellectual incompetence. While the purpose of these studies were to investigate different aspects of construct validity, the combined

findings suggest that the CIPS may provide an informative, yet, incomplete picture of IP among Black students.

Factorial and Discriminant Validity of the Clance Impostor Scale

With regard to the first aim of the study, it was predicted that a multidimensional factor structure would best fit the CIPS compared to a unidimensional model. This prediction was supported, but in an unexpected way. Results from analyses revealed that a novel multidimensional bi-factor model fit the data significantly better than the previously identified model structures. Perhaps the most notable debate with respect to the CIPS, is if this scale should be considered multidimensional given the high correlation between its different dimensions (Chrisman et al., 1995; French et al., 2008; Leary et al., 2000; Simon & Choi, 2017). However, as mentioned earlier, the bi-factor model may have evidenced superior fit relative to the previously identified second-order models, as it may account for and parse out correlations between the different dimensions through the general and subfactors. Thus, while this study does continue the trend of hypothesizing a "better fitting" model, it is important to note that the subfactors within the model are identical to the luck, fake, and discount dimensions proposed by Chrisman and colleagues (1996).

On the one hand, the failure to replicate empirical factor structures of the CIPS using general CFAs brings into a focus a larger issue raised by some scholars who argue that the multidimensionality of the scale is problematic. In particular, research has suggested that the CIPS may be comprised of both defining features of IP and distal correlates which make it difficult to identify the "core feelings of inauthenticity that are central to impostorism" (Leary et al., 2000, p. 735). Yet, on the other hand, results from bi-factor analyses, which supported the multidimensionality of this scale, were largely reinforced by the qualitative findings in Study 3. Therefore, findings from the current suggest lend credence to the significance of the traditional

dimensions of the CIPS. Taken together, while there is certainly a need for more support to identify the conceptual clarity and utility of the subfactors of the CIPS (French et al., 2008), findings from this study suggest that this scale is multidimensional in nature.

In light of the multidimensionality of this scale, it is important that analyses provided evidence of discriminant validity through comparing the CIPS to measures of achievement motivation, locus of control, fear of negative evaluation, John Henryism, minority status stress, perfectionism, self-esteem, and social anxiety. Comparing the CIPS to these measures illustrated that while IP may be related to these constructs to some degree, it is also considerably discriminable from each, thus supporting predictions of discriminant validity. Furthermore, these findings support previous explorations of discriminant validity (Chrisman et al., 1995) and also demonstrate that both the total score and subscores of the CIPS are distinguishable. Thus, while the dimensionality of the CIPS may remain open to question, it is evident that at the very least, the CIPS does represent a unique construct with distinct characteristics.

Longitudinal Stability of Clance Impostor Scale

The second aim of the study was to conduct tests of measurement invariance to examine the longitudinal stability of the factor structure of the CIPS. Measurement invariance is an important aspect of construct validity that assesses the ability of a particular instrument to accurately capture changes in a construct over time (Meredith, 1993). That is, does a measure assess a particular variable in the same way at different time points? In light of the inconsistent factor structure of this measurement tool, it was predicted that assumptions of invariance would be violated. Consistent with predictions, the CIPS was not found to be invariant, as analyses revealed that none of the previously identified factor structures fit the data at each time point. Moreover, several items were found to fit the data poorly and exhibited unpredictable patterns of factor loadings.

As discussed throughout this document, there are myriad factors that may contribute to the temporal instability of CIPS that should be restated. First, there appear to be clear concerns related to item functioning, as every psychometric investigation of the CIPS has removed some configuration of items from analyses. While there has been no general agreement on what items to remove, the trend of dropping items from analyses suggests that some items may be problematic or do not add anything substantive to the CIPS. Given this unpredictable pattern of item dropping within cross sectional research, it is difficult to identify how stable items remain over time. For example, a recurrent finding within both Study 1 and 2 was the lack of variance explained by several items on the CIPS. Given that item fit was found to be problematic both cross-sectionally and longitudinally, it is possible that this may represent one of the main culprits in identifying a stable factor structure. As such, a potential avenue for future work would be to examine the CIPS through item driven analyses (e.g., item response theory; IRT), to further identify items on the scale that may be problematic. Rather than assessing global model fit, IRT is more concerned with model fit at the item level and person level, in addition to individual item characteristics (i.e., difficulty, discrimination; Embretson & Reise, 2013).

Second, it is possible that this factorial instability is a reflection of the previous samples in which the scale has been validated in. Interestingly, each study that has examined the factor structure of the CIPS has done so within a sample of predominately White students with majors specific to STEM (French et al., 2008; Simon & Choi, 2017) or psychology (Chrisman et al., 1995). While speculative, it is possible that these non-representative samples produced biased response patterns (which ultimately inform factor structures) that do not generalize to students in other fields. This would help to explain why there has been relatively little overlap in any of this past work, and why none of the previous empirical models were found to generalize to the either

sample used in Study 1 and Study 2 that consisted of Black students from a host of different majors. One potential remedy for this concern would be for future work to consider examining IP on a larger scale. As an example, utilizing a multi-site study design in which a more representative sample of students are followed over time would produce much needed clarity with respect to the generalizability of the internal properties of the CIPS.

Finally, the failure to find invariance may suggest that IP may not look the same over time. This represents a plausible explanation given the developmental significance of this construct, and that research has found IP to be relevant at virtually every developmental stage including childhood (Chayer & Bouffard, 2010), adolescence (Caselman, Self, & Self, 2006), emerging adulthood (Cokley et al., 2015), and adulthood (Hutchins, 2015). As a concrete example of this point, consider how cognitions of IP within a Black high school student may differ from that of cognitions of IP within a Black professor.

On the one hand, literature suggests that adolescents formulate their sense of self, in part, as a function of how they believe they are perceived by others (Eccles & Wigfield, 2002). Yet, this practice of reflected appraisals may represent a challenging and potentially psychologically harmful process for Black adolescents, given the prevalence of race-related stressors during this developmental period (Neblett, Philip, Cogburn, & Sellers, 2006; Sellers, Copeland-Linder, Martin, & Lewis, 2006; Smith-Bynum, Lambert, English, & Ialongo, 2014), which may foster feelings and thoughts that they are different and potentially inferior to those around them (Bernard & Neblett, 2018). Therefore, in the context of adolescence, cognitions of IP may revolve around a student grappling with an identity that may be devalued within society, particularly if this individual is perceived to violate socially prescribed norms and expectations (e.g., a Black student within an honors course). On the other hand, faculty members have also

been found to endorse elevated levels of IP (Clark, Vardeman, & Barba, 2014; Hutchins, 2015). In fact, some work suggests that beginning level faculty may experience more insecurity in their ability as they are establishing their professional identity (Earle Reybold & Alamia, 2008). When considered with some of the other stressors associated with being a Black faculty member (e.g., navigating different identities, underrepresentation, "publish or perish" pressures, inconsistent support and validation), this uncertainty may serve as fertile ground for cognitions of IP to surface. This is consistent with work by Hutchins and colleagues (2015), who assert that "imposter thoughts might be more pronounced for faculty during their formative years (i.e., on the tenure-track) then in their mid or later career experiences" (p.5). Thus, while the general concept of IP may remain the same, it is possible that the content of one's cognitions may shift or evolve as a function of context and/or developmental stage. This premise is in line with the idea of heterotypic continuity articulated within the developmental psychopathology framework (Rutter & Sroufe, 2000), which suggests that symptoms or expressions of an underlying issue may change over time.

Qualitative Considerations of Impostor Phenomenon

The third aim of the study was to elucidate the convergence or divergence in how Black students discussed IP relative to its traditional conceptualization. The ability to highlight the narratives of Black college students provides invaluable insight into the nature of IP among individuals of color and may have implications for the ways in which scholars conceptualize and measure this construct. While the previously discussed studies have provided insight into the construct validity of the CIPS through traditional quantitative means, qualitative analyses provided mixed results suggesting that particular aspects of IP may align with empirical literature while others may not.

With respect to convergence, the majority of students expressed familiarity with cognitions of IP and reported to have had them at some point within their college tenure. Perhaps the most striking overlay that was observed within student narratives was the recurrently discussed paradoxical experiences of feeling intellectually incompetent despite objective success:

> *it feels kind of ... it feels contradictory, because I'm having these feelings of self-doubt, but yet I'm still getting these grades. (CF)*

This overarching discrepancy represents among the primary indications of IP first noted by the seminal work of Clance and Imes's (1978). Moreover, in speaking about their experiences, many students also discussed additional cognitions that are associated with IP including discounting ability, attributions of luck, and concerns of being exposed as a fraud. Interestingly, these general themes articulated by this student have been reported in every qualitative exploration of IP (Craddock et al., 2011; Lane, 2015), which lends credence to the multidimensional nature of this construct. Thus, at the very least, the recurrent finding of these major themes suggest that there may be a common underlying set of cognitions related to IP.

While it was interesting to find that student narratives overlapped with theory, it is important to highlight that this overlay paints an incomplete picture. In actuality, much of what was discussed within these interviews suggest that our understanding of IP may be limited among Black individuals. For example, the overwhelming majority of students who reported familiarity with IP talked about this construct within the context of their minority status. More specifically, individuals reported that the saliency of the minority status preceded and informed IP cognitions (i.e., "*one of the only*" and "*looking glass effect*"). As a result of these experiences, many students reported tendencies to "internalize" the negative ways in which they believed they

were seen by others, which subsequently gave rise to the well-known markers of IP referenced earlier:

> *I would say that I think race plays a role in feelings of imposter syndrome in frequently feeling as though as an African American in competitive positions or higher level positions or academic achievement that is like an outlier. That's not the norm or that's not really what's supposed to happen. Whether it's been like your community, or other races that's kinda fed that to you, I think that we all sometimes internalize those thoughts. (IS)*

Though these findings support research that has examined IP in the context of race-related and minority status stress, they also represent a significant deviation from empirical literature by suggesting that IP may be externally rather than internally driven. Said differently, findings from the qualitative interviews suggest that IP may be informed by external and contextual messages, experiences, and interactions, above and beyond that of internal factors or characteristics.

How do these findings inform our understanding of the construct validity of IP? In review of items on the CIPS, not one alludes to the unique race-related attributions discussed within student narratives. Moreover, no item on the scale (or any other extant measures of IP) includes aspects that touch on underrepresentation, isolation, or any other experiences that may be associated with being a member of a minority group. As such, it is difficult to consider IP as completely valid tool if the items that comprise the scale do not align with the experiences or cognitions that students are expressing. Therefore, as noted within previous literature, it is possible that there are items that may better capture IP among Black students that need to be integrated into extant measures (Ewing et al., 1996).

Limitations and Future Directions

Despite the promising findings of the current work, there are several limitations related to generalizability, methods, and analyses of the study.

Generalizability limitations. The generalizability of the findings may be limited due to the nature of the sample. For example, within Study 1, students were drawn from two very different contextual settings (i.e., PWIs and HBCUs), which may also limit the extent to which findings generalize to other samples. Moreover, participants in all three studies were undergraduate students which may limit the generalizability of the findings to other samples that have been shown to experience IP (e.g., high school students, graduate students, professionals). Additionally, although students had to self-identify as African American/Black to participate in any portion of the study, several students endorsed more than one race (e.g., Latino/a, Caucasian) and/or ethnicity (e.g., Haitian, Dominican). Given the significant heterogeneity of the Black diaspora and the added nuanced complexities associated with biracial and multiethnic identities and contextual differences, additional research is needed to examine within group variability of IP endorsements. Furthermore, the generalizability of the qualitative findings may be limited due to self-selection bias, in that students who were contacted to participate were not randomly selected from a larger sample of students, but were selected from a pool of individuals who expressed interest. Finally, the quantitative portions of the project (Study 1 and 2), consisted of samples with a predominant female skew.

Though research has argued that the effects of IP are particularly salient among Black women, it is also possible that Black males experience IP differently. For example, Black males negotiate a barrage of negative societal messages and media portrayals that frequently conflict with their positive attributes, traits, and characteristics (Carter, 2008). Furthermore, the chronicity of negative race-related experiences has been shown to have erosive effects on the

psyche of Black males (e.g., increased anxiety, hopelessness, fear; Smith, Allen, & Danley, 2007) and may lead to the development of maladaptive perfectionistic tendencies (e.g., excessive self-monitoring) as a means to rectify the negative way in which they are seen by others (Lambert, Robinson, & Ialongo, 2014). Taken together, IP may represent a more socially driven experience among Black males, as they are expected to negotiate a cadre of inaccurate societal messages, portrayals, and stereotypes that may challenge how they see themselves. For this reason, future work must make greater efforts to recruit Black males into their studies, not only for the purposes of generalizability of findings, but also to further our understanding of the gender-based experiences of IP. One approach that may be particularly fruitful in furthering our understanding of IP among Black males is through the use of focus groups, which represent group based interviews designed to capitalize on group interactions to understand a particular topic of phenomenon (Kitzinger, 1995). This approach is useful, as it may help to promote discussions of an otherwise internalized and private experience while simultaneously normalizing IP cognitions among Black males.

Analytic limitations. Though beyond the scope of the study, it is noteworthy that students attending PWIs endorsed IP at significantly higher levels than their HBCU counterparts on the CIPS. Therefore, it is possible that contextual factors not measured within the current study (e.g., sense of belonging, peer support, campus climate) may play a key role in modulating cognitions of IP, and subsequent endorsements on the CIPS. Moreover, it is difficult to determine the extent to which contextual differences (e.g., attending a PWI vs. an HBCU, cohort membership) effected analyses of factorial validity and measurement invariance, and if the factor structure of the CIPS would have looked different within a more contextually homogenous group. Moving forward, future investigations should explore these differences to unpack how

context may directly or indirectly inform IP, particularly among students of color. Furthermore, due to the longitudinal instability of the CIPS, the exploratory nature of the Study 2 resulted in multiple models being estimated. Within these analyses several items were found to behave unpredictably within analyses, and it was difficult to determine why this was the case given the theory driven approach that was taken. Given the limitations of this theory driven approach (e.g., model constraints), a critical evaluation of the items on this scale would be beneficial, as it is clear that refinements and revisions are warranted.

Methodological limitations. One major methodological concern related to the interview protocol utilized for the qualitative strand (Study 3) of the current project. More specifically, the interview guide was developed from a study examining IP within a group of predominately White students (Lane, 2015). Although I modified this guide to be used for the current study, it is possible that I may have overlooked questions that would have facilitated more in-depth discussions and comparisons related to cognitions of IP among Black students. Second, a limitation of the passage is that it was framed within a male student's experience. However, as illustrated within the results of Study 3, the intersectionality between gender and race may matter when thinking about IP. As such, future work should consider the utilization of vignettes that discuss IP from a female or non-gendered perspective to determine the extent to which that influences responses. Third, given that the bulk of interviews were conducted via virtual software, it was at times difficult to determine if participants understood the questions that they were asked within the interviews. This may be due to several reasons including the wording or novelty of questions, unfamiliarity or discomfort with discussing IP, or a confluence of other factors. For this reason, future work should consider utilizing focus groups and/or cognitive interviewing as a first step to ensure the interview protocol is serving its intended goal.

Strengths of the Study

Despite these limitations, this study has many strengths that extend our understanding of IP and the construct validity of the CIPS among Black students. Perhaps the greatest forte of the current study is its multi-method approach, which leveraged the methodological and analytical strengths of quantitative, qualitative, cross-sectional, and longitudinal techniques. This multi-method approach is among the first in the extant literature and allowed for an enhanced data driven means of systematically examining the construct validity of the IP and the CIPS among Black students. An additional strength of the study was the utilization of multiple datasets that consisted of a large number of Black students, as it confirms previous assertions that IP is particularly prominent among this population. Relatedly, the recruitment of students from both PWIs and HBCUs represents an additional strength of the study, as it provided tangible evidence that IP may permeate contexts to influence Black students within both predominately White and Black settings.

Methodological Implications

Several implications can be gleaned from the current study that can be used to inform future scholarly work related to IP. First, given the dated nature and continued volatility of the CIPS within predominantly White and non-White samples, broad revisions need to be made to this scale to enhance its accuracy and stability. A viable option to begin this refining process is through the integration of quantitative (e.g., survey data) and qualitative methods (e.g., individual interviews, focus groups). Combining these techniques would allow scholars to combine and leverage the strengths of quantitative and qualitative analyses, which together could produce meaningful and interdependent data that would lay the foundation for a new or revised scale that captures IP in a more sensitive, reliable, and representative way.

Second, given that Black students attending PWIs reported considerably higher levels of IP than students attending HBCUs, it is important to elucidate what factors may be driving these differences. This finding provides a rich avenue for future research to investigate how factors such as contextual differences may inform cognitions of IP. One example of future directions could be to explore how perceptions of racial or gender representation (in peer groups, professors, and administration) may serve to protect or allay cognitions of IP among individuals from underrepresented backgrounds. Another concrete example could be to explore the perceived climate of one's environment may serve to increase or decrease risk for IP. A final example involves examining how cognitions of IP may change as individuals transition from predominantly Black (e.g., family neighborhood) to predominantly non-Black contexts (e.g., PWI, vocational setting), and vice versa. Finally, the themes generated from student interviews could also serve as a catalyst for future investigations to investigate the generalizability of Black student experiences to other marginalized groups.

Educational Implications

Given that the collegial context represents a prime developmental period for cognitions of IP to flourish, it is important to discuss the educational implications of the current study. Findings from the current study suggest that representation within the academy is critical to mitigating cognitions of intellectual incompetence among Black students. Therefore, in courses or contexts where an underrepresented student is present, professors should be mindful of the ways in which IP cognitions (e.g., feeling fraudulent) may dissuade students from underrepresented backgrounds from internalizing their own abilities. While it may be difficult to address and validate cognitions within students individually, professors could take broad steps to foster a learning environment that creates a safe and welcoming space for students of color. For example, professors could increase representation and diversity within the classroom by

including racial and ethnic minority members as speakers or panel members when included within the course curriculum, teaching topics and framing test questions using non-White examples and names, and integrating literature from non-White scholars.

Additionally, despite its well documented prevalence among college students, cognitions of intellectual inferiority and self-doubt represent an area seldom discussed within academia. In light of the insidious nature of IP among college students, and its particularly deleterious impact on students of color, it is crucial for institutions to begin proactively developing programming and formal practices tailored to address IP (Parkman, 2016). A number of colleges have already begun to adopt such practices, as a means to challenge myths of not belonging, recognize and normalize IP cognitions, and cultivate adaptive coping skills to navigate IP tendencies. For example, the University of Colorado holds a "Dialogue and Healing" series in which they discuss the relevance of impostor phenomenon and ways to overcome it among undergraduate students. Moreover, the University of North Carolina at Chapel Hill holds a workshop each semester specifically designed for underrepresented graduate students and post docs related to navigating IP by bolstering resiliency and optimism. Finally, several universities have hired speakers (e.g., Dr. Valerie Ashby, Dr. Valerie Young) to develop workshops for students to learn about and discuss IP.

Clinical Implications and Recommendations

In light of the negative psychological outcomes associated with IP, it is also crucial to discuss the clinical implications of the present findings. First, while the CIPS may be a useful tool to introduce IP, clinicians should consider situating discussions of IP within the lived experiences of their clients. Said differently, the CIPS may not fully capture how Black emerging adults make sense of IP and should therefore be supplemented by questions that ascertain how experiences related to one's minority status may also contribute to IP. For example, if clinicians

suspect that IP may be a concern for a particular client, they could begin to probe if traditional dimensions of IP (e.g., cognitions of luck and fraudulence, tendencies to discount ability) are relevant to presenting concerns, in addition to culturally unique experiences that may be indicative of IP including: a) perceptions of racial/ethnic isolation and underrepresentation on campus (e.g., In what ways do you feel supported (or not) on campus as a student of color?); b) if and how students may use their race as a means to discount their success and intellect (e.g., Do you attribute any specific instance of success or accomplishments to your race?); and c) the unique pressures that inform the internalized need to excel (e.g., To what extent do you feel the need to positively represent your faculty, community, or culture?). Such questions may assist a clinician in understanding the factors that may undergird the development and maintenance of IP, which could subsequently inform areas for intervention.

Second, IP is entrenched within maladaptive and distorted cognitions that are important to normalize within and outside of the therapeutic context. One useful modality of treatment to help Black emerging adults who are experiencing high levels of IP is cognitive behavioral therapy (CBT). The core elements of CBT suggest that recognizing and altering distorted thought patterns should, in turn, shift subsequent emotions and behaviors. An area of intervention in which CBT may be particularly effective in is targeting and critically evaluating the accuracy of maladaptive attributions that make students question the legitimacy of their success (e.g., racial attributions). Challenging the distorted ways in which students see themselves, and more importantly *how* such self-perceptions came to be (e.g., social comparisons, internalized stereotypes), represents a powerful means of addressing and assuaging IP cognitions. Another target of intervention within the CBT framework would be to utilize tools to recognize and track how maladaptive cognitions of IP may oscillate as a function of context (e.g., thought logs).

Possessing an understanding of the settings, situations, or circumstances that may serve as risk factors for IP, can provide much needed insight into where interventions need to be targeted, which could subsequently inform approaches to treatment.

Finally, it is important to recognize that although IP is rooted within maladaptive cognitions, there may be very real experiences that undergird such distorted thinking patterns, which may be inappropriate to challenge or reframe. That is, cognitions of IP do not exist in a vacuum, but are rather shaped by a confluence of factors specific to one's devalued status in society (Cokley et al., 2017; McClain et al., 2016; Peteet, Brown, et al., 2015). For example, Black individuals experience racial discrimination at an increased rate than that of any other racial group (Pieterse, Todd, Neville, & Carter, 2012). It has also been established that Black students are evaluated very differently within academic and professional settings due to their race (Harlow, 2003; Irizarry, 2015; Light, Roscigno, & Kalev, 2011). I would be remiss to not mention the reality of the dual stressors that Black women must bear as a product of their "double jeopardy" status, and the increased psychological risks associated with this status (Neblett et al., 2016). Accordingly, rather than seeking to challenge or "treat" these issues, clinicians should do their due diligence and be willing and able to discuss and process these unique experiences with their Black clients. This is necessary as previous literature within client-clinician dyads has found that dismissing experiences of marginalization or race-related stressors within therapy can lead to treatment dissatisfaction (Chang & Berk, 2009). Such conversations may also be helpful in laying the foundation for interventions designed to bolster self-validation and positive self-appraisals (e.g., mindfulness, acceptance and commitment therapy), which may bolster resiliency and positive internal dialogues (Lane, 2015).

Conclusion

This study systematically examined the construct validity of the CIPS among Black students through use of an innovative multi-method design. Results from each study extend our understanding of the CIPS and suggest that while there is benefit in its utility, more work needs to be done to improve its precision and stability to capture IP among Black students. More specifically, while findings provided partial support for factorial validity, results challenged assumptions of measurement invariance and also suggest that there are commonalities and differences in the ways in which IP may be experienced among Black college students. Taken together, the collective findings of this project underscore the need for future research to develop culturally validated measures and have the potential to shape future explorations of IP among Black emerging adults.

Table 1. Bivariate Correlations of Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Gender	—																	
2. SES	.02	—																
3. Age	.18 *	.08	—															
4. College Attended	.05	-.05	.03	—														
5. IP	-.09	.09	-.04	-.32 **	—													
6. MTA	.06	-.19 **	-.03	.14 *	-.15 *	—												
7. MTF	-.27 **	.00	-.07	-.23 **	.51 **	-.08	—											
8. LOC Ability	.01	.01	.00	.04	.18 **	.06	.17 **	—										
9. LOC Effort	.06	-.09	-.01	.17 **	-.07	.40 **	.04	.33 **	—									
10. LOC Luck	.11	.11	-.03	-.23 **	.42 **	-.21 **	.18 **	.27 **	-.17 **	—								
11. LOC Context	-.01	.16 *	-.09	-.24 **	.43 **	.14 *	.21 **	.19 **	-.09	.67 **	—							
12. FNE	-.11	.02	-.09	-.29 **	.58 **	-.16 **	.51 **	.28 **	-.02	.25 **	.28	—						
13. John Henryism	.11	-.10	.06	.24 **	-.40 **	.50 **	-.30 **	-.04	.36 **	-.16 **	-.19 **	-.33 **	—					
14. MSS	-.10	-.08	.04	-.41 **	.40 **	-.09	.33 **	.14 *	-.03	.31 **	.26 **	.40 **	-.17 **	—				
15. COM	.04	.04	-.01	-.21 **	.54 **	-.16 *	.44 **	.33 **	-.11	.36 **	.41 **	.57 **	-.24 **	.35 **	—			
16.PS	.05	-.04	-.01	-.06	.08	.36 **	.16 *	.27 **	.30 **	.02	.13 *	.21 *	.35 **	.16	.33 **	—		
17. Self Esteem	.11	-.04	.06	.17 **	-.61 **	.37 **	-.41 **	-.15 *	.25 **	-.17 **	-.31 **	-.48 **	.53 **	-.28 **	-.60 **	.07	—	
18. Social Anxiety	-.16 *	-.01	-.06	-.19 **	.53 **	-.20 **	.60 **	.17 **	-.03	.23 **	.27 **	.51 **	-.33 **	.37 **	.43 **	.06	-.52 **	—
M	.23	2.79	19.92	2.22	2.99	4.24	3.39	3.49	3.87	2.89	3.24	2.91	4.13	2.33	2.67	3.86	3.80	2.35
SD	0.42	0.84	1.61	1.21	0.79	0.66	0.87	0.62	0.62	0.74	0.71	1.15	0.49	1.04	0.88	0.66	0.8	0.83

Note. Gender coded "0" = Female, "1" = male, SES = socioeconomic status, IP = impostor phenomenon, MTA = motivations to achieve, MTF = motivations to avoid failure, LOC = locus of control, FNE = fear of negative evaluation, MSS = minority status stress, COM = perfectionistic concerns over mistakes, PS = perfectionistic personal standards; ***p* < .01; **p* < .05.

Table 2. Fit Statistics for Confirmatory Factor Analyses Across Factor Models

Model	WLSMV χ^2	df	*p*- value	TLI	CFI	RMSEA [90% CI]
Basic One Factor	471.85	170	<. 001	.95	.95	.08[.07, .09]
Correlated Errors one Factor	261.57	101	<. 001	.97	.97	.08[.07, .09]
Two Factor	347.42	103	<. 001	.95	.96	.10[.08, .11]
Three Factor	374.96	132	<. 001	.95	.96	.08[.07, .09]
Three Factor Bi-factor	203.48	87	<. 001	.97	.98	.07[.06, .08]
Four Factor Bi-factor	219.41	114	<. 001	.98	.98	.06[.05, .07]

Note. WLSMV = weighted least squares means and variance, df = degrees of freedom, TLI = Tucker-Lewis index, CFI = comparative fit index, RMSEA = root mean square error of approximation

Table 3. Summary of Confirmatory Factor Analyses

	Basic 1-Factor Model	**1-Factor Model Correlated Errors**	**2-Factor Model**		**3-Factor Model**		
Items	First Factor	First Factor	First Factor	Second Factor	First Factor	Second Factor	Third Factor
1. I have often succeeded on a test or task even though I was afraid that I would not do well before I undertook the task.	-.08	-.09	--	--	--	--	--
2. I can give the impression that I'm more competent than I really am.	.28**	--	--	--	--	--	--
3. I avoid evaluations if possible and have a dread of others evaluating me.	.60**	.55**	.56**	--	--	.56**	--
4. When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.	.76**	.77**	.77**	--	--	.77**	--
5. I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.	.41**	.36**	.41**	--	.42**	--	--
6. I'm afraid people important to me may find out that I'm not as capable as they think I am.	.82**	.82**	--	.83**	--	.83**	--
7. I tend to remember the incidents in which I have not done my best more than those times I have done my best.	.66**	--	--	.67**	--	.67**	--
8. I rarely do a project or task as well as I'd like to do it.	.67**	--	--	.68**	--	.68**	--

9. Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.	.68**	.68**	.69**	--	.70**	--	--
10. It's hard for me to accept compliments or praise about my intelligence or accomplishments.	.76**	.74**	--	.76**	--	--	.80**
11. At times, I feel my success has been due to some kind of luck.	.63**	.62**	.64**	--	.65**	--	--
12. I'm disappointed at times in my present accomplishments and think I should have accomplished much more.	.65**	.64**	.65**	--	--	.65**	--
13. Sometimes I'm afraid others will discover how much knowledge or ability I really lack.	.80**	.80**	--	.80**	--	.80**	--
14. I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.	.76**	.77**	--	.76**	--	.76**	--
15. When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.	.90**	.90**	.91**	--	.94**	--	--
16. If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.	.71**	.69**	--	.71**	--	--	.74**
17. I often compare my ability to those around me and think they may be more intelligent than I am.	.73**	.74**	--	.73**	--	.74**	--

18. I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.	.78**	.78**	--	.78**	--	.78**	--
19. If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell others until it is an accomplished fact.	.56**	--	--	--	--	--	.58**
20. I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.	.65**	.64**	--	--	--	.65**	--

Note. *$p < .05$; *$p < .001$.

Table 4. Summary of Confirmatory Bi-factor Analyses

	3-Factor Bi-factor Model			4-Factor Bi-factor Model			
Items	Impostor Phenomenon	Luck	Fake. Discount	Impostor Phenomenon	Luck	Fake	Discount
1. I have often succeeded on a test or task even though I was afraid that I would not do well before I undertook the task.	--	--	--	--	--	--	--
2. I can give the impression that I'm more competent than I really am.	--	--	--	--	--	--	--
3. I avoid evaluations if possible and have a dread of others evaluating me.	.56**	.13	--	.43**		.47**	--
4. When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.	.77**	.01	--	.70**		.33**	--
5. I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.	.38**	.67**	--	.20**	-.65**	--	--
6. I'm afraid people important to me may find out that I'm not as capable as they think I am.	.83**	--	-.02	.76**	--	.33*	--

7. I tend to remember the incidents in which I have not done my best more than those times I have done my best.	.67**	--	.03	.61**	--	.29*	--
8. I rarely do a project or task as well as I'd like to do it.	.69**	--	.20*	.56**	--	.48**	--
9. Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.	.68**	.33**	--	.51**	-.60**	--	--
10. It's hard for me to accept compliments or praise about my intelligence or accomplishments.	.77**	--	0.11	.67**	--	--	-.61**
11. At times, I feel my success has been due to some kind of luck.	.80**	.36**	--	.49**	-.51**	--	--
12. I'm disappointed at times in my present accomplishments and think I should have accomplished much more.	.75**	-.05	--	.63**	--	.18*	--
13. Sometimes I'm afraid others will discover how much knowledge or ability I really lack.	.90**	--	-.09	.76**	--	.27**	--
14. I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.	.71**	--	-.27**	.80**	--	--	--

15. When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.	.71**	-.09	--	.88**	-.24**	--	--
16. If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.	.76**	--	-.06	.69**	--	--	-.27**
17. I often compare my ability to those around me and think they may be more intelligent than I am	.71**	--	-.42**	.78**	--	--	--
18. I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.	.76*	--	-.29**	.82**	--	--	--
19. If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell others until it is an accomplished fact.	--	--	--	.59**	--	--	--
20. I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.	--	--	--	.62**	--	.21*	--

Note. *$p < .05$; *$p < .001$.

Table 5. Discriminant Validity of Clance Impostor Scale (Bi-factor Model)

Bi-factor Model of Impostor Phenomenon	**Scale**	***b***	***β***	***p-value***
General Factor of Impostor Phenomenon				
	MTA	.33	.15	.014
	MTF	.39	.23	.000
	LOC Ability	.11	.04	.471
	LOC Effort	.14	.06	.350
	LOC Luck	.05	.03	.679
	LOC Context	.14	.06	.292
	FNE	.20	.15	.015
	John Henryism	-.59	-.19	.009
	MSS	.11	.07	.182
	COM	.04	.02	.732
	PS	.05	.02	.750
	Self Esteem	-.59	-.31	.000
	Social Anxiety	-.03	-.02	.786
Luck Factor				
	MTA	.17	.09	.347
	MTF	-.23	-.16	.114
	LOC Ability	-.22	-.11	.229
	LOC Effort	.08	.04	.698
	LOC Luck	.63	.38	.000
	LOC Context	.21	.12	.181
	FNE	.09	.08	.396
	John Henryism	.02	.01	.925
	MSS	-.07	-.06	.488
	COM	.12	.08	.475
	PS	-.18	-.10	.300
	Self Esteem	-.31	-.20	.081
	Social Anxiety	.14	.09	.330
Fake Factor				
	MTA	-.01	-.00	.967
	MTF	.22	.14	.226
	LOC Ability	.47	.21	.009
	LOC Effort	-.18	-.08	.359
	LOC Luck	-.41	-.22	.031
	LOC Context	-.13	-.07	.428
	FNE	-.12	-.10	.281

	John Henryism	.09	.03	.761
	MSS	-.11	-.08	.336
	COM	-.53	-.33	.003
	PS	.33	.16	.074
	Self Esteem	.12	.07	.554
	Social Anxiety	-.47	-.28	.003
Discount Factor				
	MTA	-.09	-.05	.678
	MTF	.29	.21	.097
	LOC Ability	.57	.29	.015
	LOC Effort	.13	.07	.603
	LOC Luck	-.26	-.16	.238
	LOC Context	.06	.04	.771
	FNE	-.22	-.21	.060
	John Henryism	-.33	-.14	.326
	MSS	.08	.07	.566
	COM	.04	.03	.854
	PS	.05	.03	.823
	Self Esteem	.10	.06	.703
	Social Anxiety	-.69	-.47	.001

Note. MTA = motivations to achieve, MTF = motivations to avoid failure, LOC = locus of control, FNE = fear of negative evaluation, MSS = minority status stress, COM = perfectionistic concerns over mistakes, PS = perfectionistic personal standards.

Table 6. Summary of Four Factor Bi-factor Model Item Fit Over Time

	Wave 1				Wave 2				Wave 3				Wave 4			
Items	**IP**	**LK**	**FK**	**DS**	**IP**	**LK**	**FK**	**DS**	**IP**	**LK**	**FK**	**DS**	**IP**	**LK**	**FK**	**DK**
3. I avoid evaluations if possible and have a dread of others evaluating me.	.60**	--	.17	--	.51**	--	.47**	--	.56**	--	-.09	--	.43**	--	.45**	--
4. When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.	.75**	--	.25**	--	.68**	--	.36**	--	.81**	--	-.13	--	.71**	--	.31**	--
5. I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.	.49**	.50**	--	--	.50**	-.68**	--	--	.52**	-.50**	--	--	.44**	.78**	--	--

6. I'm afraid people important to me may find out that I'm not as capable as they think I am.	.76**	--	.17**	--	.71**	--	.49**	--	.81**	--	.12	--	.87**	--	.26**	--
7. I tend to remember the incidents in which I have not done my best more than those times I have done my best.	.62**	--	.08	--	.76**	--	.10	--	.65**	--	.02	--	.68**	--	.28**	--
8. I rarely do a project or task as well as I'd like to do it.	.63**	--	.30**	--	.63**	--	.35**	--	.59**	--	.19*	--	.63**	--	.11	--
9. Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.	.54**	.68**	--	--	.63**	-.52**	--	--	.77**	-.36**	--	--	.69**	.47**	--	--
10. It's hard for me to accept compliments or praise about my	.62**	--	--	1.0	.75**	--	--	-.40**	.80**	--	--	.47**	.64**	--	--	.72**

intelligence or accomplishments.																
11. At times, I feel my success has been due to some kind of luck.	.61**	.67**	--	--	.69**	-.59**	--	-.27*	.58**	-.89**	--	--	.63**	.66**	--	.46*
12. I'm disappointed at times in my present accomplishments and think I should have accomplished much more.	.78**	--	.43**	--	.78**	--	.03	--	.73**	--	.36*	--	.79**	--	-.38**	--
13. Sometimes I'm afraid others will discover how much knowledge or ability I really lack.	.79**	--	.30**	--	.83**	--	.27**	--	.81**	--	.35*	--	.90**	--	.07	--
14. I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.	.83**	--	--	--	.82**	--	--	--	.77**	--	--	--	.81**	--	--	--

15. When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.	.76**	.30**	--	--	.86**	-.18**	--	--	.84**	-.12*	--	--	.83**	-.02	--	--
16. If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.	.61**	--	--	.29**	.67**	--	--	-.44**	.78**	--	--	.42**	.57**	--	--	.46**
17. I often compare my ability to those around me and think they may be more intelligent than I am.	.85**	--	--	--	.84**	--	--	--	.80**	--	--	--	.74**	-.02	--	--

18. I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.	.86**	--	--	--	.83**	--	--	--	.83**	--	--	--	.77**	--	--	--
19. If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell others until it is an accomplished fact.	.60**	--	--	--	.56**	--	--	--	.60**	--	--	--	.53**	--	--	--
20. I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.	.65**	--	.10	--	.59**	--	.02	--	.58**	--	.04	--	.58**	--	-.19*	--

Note. IP = Impostor phenomenon general factor, LK = Luck factor, FK = Fake factor, DS = Discount Factor.
*$p < .05$; *$p < .001$.

Table 7. Summary of Confirmatory Factor and Bi-factor Model Fit Statistics Over Time

Model	Wave of Data	WLSMV χ^2	df	*p*- value	TLI	CFI	RMSEA [90% CI]
Basic One Factor							
	1	375.08	170	<. 001	.94	.94	.09 [.08, .10]
	2	347.00	170	<. 001	.95	.95	.09 [.07, .10]
	3	412.46	170	<. 001	.94	.94	.11 [.10, .13]
	4	360.67	170	<. 001	.91	.92	.11 [.09, .13]
One Factor Correlated Errors							
	1	242.84	101	<. 001	.95	.96	.10 [.08, .11]
	2	206.31	101	<. 001	.96	.97	.09 [.07, .10]
	3	205.08	101	<. 001	.97	.97	.10 [.08, .10]
	4	197.66	101	<. 001	.95	.95	.10 [.08, .12]
Two Factor							
	1	274.30	103	<. 001	.94	.95	.10 [.09, .12]
	2	257.77	103	<. 001	.95	.96	.10 [.09, .12]
	3	301.39	103	<. 001	.94	.95	.13 [.12, .15]
	4	280.61	103	<. 001	.91	.92	.14 [.12, .16]
Three Factor							
	1	279.29	132	<. 001	.95	.96	.08 [.07, .10]
	2	254.02	132	<. 001	.96	.97	.08 [.07, .10]
	3	289.93	132	<. 001	.96	.96	.11 [.09, .12]
	4	283.45	132	<. 001	.92	.93	.11 [.09, .13]
Three Factor Bi-factor							
	1	179.18	89	<. 001	.96	.97	.08 [.07, .10]
	2	167.02	89	<. 001	.97	.98	.08 [.06, .10]
	3	180.88	89	<. 001	.97	.98	.10 [.08, .12]
	4	160.08	89	<. 001	.96	.97	.10 [.07, .12]
Four Factor Bi-factor							
	1	231.53	119	<. 001	.96	.97	.08 [.06, .09]
	2	185.91	118	<. 001	.97	.98	.07 [.05, .08]
	3	209.26	118	<. 001	.97	.98	.08 [.07, .10]
	4	180.19	118	<. 001	.97	.97	.08 [.05, .10]

Note. WLSMV = weighted least squares means and variance, df = degrees of freedom, TLI = Tucker-Lewis index, CFI = comparative fit index, RMSEA = root mean square error of approximation.

Table 8. Summary of Exploratory Factor Model Fit Statistics Over Time

EFA Model	Wave of Data	WLSMV χ^2	df	*p*- value	TLI	CFI	RMSEA [90% CI]
One Factor							
	1	339.65	135	<. 001	.93	.94	.10 [.09, .11]
	2	302.59	135	<. 001	.95	.95	.10 [.08, .11]
	3	347.52	135	<. 001	.94	.95	.12 [.11, .14]
	4	323.61	135	<. 001	.91	.92	.12 [.11, .14]
Two Factor							
	1	247.28	118	<. 001	.95	.96	.08 [.07, .10]
	2	227.55	118	<. 001	.96	.97	.08 [.07, .10]
	3	260.59	118	<. 001	.95	.97	.11 [.09, .12]
	4	231.10	118	<. 001	.94	.95	.10 [.08, .12]
Three Factor							
	1	182.69	102	<. 001	.96	.98	.07 [.05, .09]
	2	177.66	102	<. 001	.97	.97	.07 [.06, .09]
	3	171.49	102	<. 001	.97	.98	.08 [.06, .10]
	4	159.93	102	<. 001	.96	.98	.08 [.05, .10]

Note. WLSMV = weighted least squares means and variance, df = degrees of freedom, TLI = Tucker-Lewis index, CFI = comparative fit index, RMSEA = root mean square error of approximation.

Table 9. Summary of Three Factor Exploratory Factor Model Item Fit Over Time

	Wave 1			Wave 2			Wave 3			Wave 4		
Items	**F1**	**F2**	**F3**	**F1**	**F2**	**F3**	**F1**	**F2**	**F3**	**F1**	**F2**	**F3**
3. I avoid evaluations if possible and have a dread of others evaluating me.	.18*	.36*	.22*	.32*	.50*	-.08	.20	.16	.32*	.41*	.23*	-.08
4. When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.	.30*	.49*	.16*	.38*	.39*	.13	.25*	.22*	52*	.70*	.30*	-.12
5. I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.	.63*	.00	.15	.85*	.06	-.08	.82*	-.20*	.18*	-.07	.90*	-.03
6. I'm afraid people important to me may find out that I'm not as capable as they think I am.	.25*	.67*	.02	.22*	.79*	-.05	.24*	.48*	.28*	.83*	.02	.20*
7. I tend to remember the incidents in which I have not done my best more than those times I have done my best.	.09	.46*	.19	.11	.41*	.40*	-.01	.41*	.38*	.48*	.20*	.19*

8. I rarely do a project or task as well as I'd like to do it.	.31*	51*	.02	.31*	.47*	.05	.18*	.42*	.13	.55*	.08	.13
9. Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.	.81*	.04	.07	.65*	.14	.13	.61*	.37*	.04	.26*	.63*	.12
10. It's hard for me to accept compliments or praise about my intelligence or accomplishments.	.27*	.05	.54*	.35*	.01	.58*	.41*	-.07	.68*	-.06	.45*	.53*
11. At times, I feel my success has been due to some kind of luck.	.81*	.06	.12	.77*	.07	.17*	.90*	.13	-.09	.10	.86*	.04
12. I'm disappointed at times in my present accomplishments and think I should have accomplished much more.	.45*	.24*	27*	.02	.43*	.47*	.12	.78*	-.01	.26*	.05	.61*
13. Sometimes I'm afraid others will discover how much knowledge or ability I really lack.	.37*	.60*	.06	.09	.70*	.24*	.34*	.68*	-.00	.61*	.07	.40*
14. I'm often afraid that I may fail at a new assignment or undertaking even though I	.15*	.59*	.23*	.00	.42*	.53*	.22*	.58*	.16*	.49*	.14	.38*

generally do well at what I attempt.												
15. When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.	.15*	.31*	.33*	.29*	.29*	.49*	.36*	.38*	.33*	.67*	.20*	.13*
16. If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.	.30	-.28*	.79*	.37*	-.15	.63*	.22*	-.06	.82*	-.62	.39*	.60*
17. I often compare my ability to those around me and think they may be more intelligent than I am.	-.04	.56*	.45*	.17*	.40*	.41*	-.04	.55*	.44*	.23	.09	.58*
18. I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.	-.11	.48*	.62*	.07	.20	.71*	-.04	.37*	.66*	.17*	.08	.71*
19. If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell	.01	.10	.58*	.20	.03	.43*	.05	.13	.53*	.03	.17	.48*

others until it is an accomplished fact.												
20. I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.	.11	.25*	.44*	.01	.32*	.37*	.06	.27*	.37*	.18	.03	.48*

Note. F1 = Factor 1, F2 = Factor 2, F3= Factor 3.
*$p < .05$.

Table 10. Summary of Exploratory Bi-factor Model Fit Statistics Over Time

Bi-factor Model	Wave of Data	WLSMV χ^2	df	*p*- value	TLI	CFI	RMSEA [90% CI]
Two Factor							
	1	247.28	118	<. 001	.95	.96	.08 [.07, .10]
	2	227.55	118	<. 001	.96	.97	.08 [.06, .10]
	3	260.59	118	<. 001	.95	.97	.11 [.09, .12]
	4	231.10	118	<. 001	.94	.95	.10 [.08, .12]
Three Factor							
	1	182.69	102	<. 001	.96	.97	.07 [.05, .09]
	2	177.66	102	<. 001	.97	.98	.08 [.06, .09]
	3	171.49	102	<. 001	.97	.98	.08 [.06, .10]
	4	159.93	102	<. 001	.96	.98	.08 [.05, .10]
Four Factor							
	1	143.73	87	<. 001	.97	.98	.06 [.05, .08]
	2	145.28	87	<. 001	.97	.98	.07 [.05, .09]
	3	140.24	87	<. 001	.98	.99	.08 [.05, .10]
	4	113.96	87	<. 001	.98	.99	.06 [.02, .09]

Note. WLSMV = weighted least squares, df = degrees of freedom, TLI = Tucker-Lewis index, CFI = comparative fit index, RMSEA = root mean square error of approximation.

Table 11. Summary of Two Factor Exploratory Bi-Factor Model Item Fit Over Time

	Wave 1			Wave 2			Wave 3			Wave 4		
Items	**F1**	**F2**	**F3**	**F1**	**F2**	**F3**	**F1**	**F2**	**F3**	**F1**	**F2**	**F3**
3. I avoid evaluations if possible and have a dread of others evaluating me.	.62*	-.04	.09	.60*	.13	.28*	.54*	.02	.10	.45	.10	-.21
4. When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.	.77*	.02	.19*	.73*	.11	.13	.80*	-.01	.17	.73	.09	-.34
5. I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.	.62*	.35*	-.05	.66*	.53*	.02	.57*	.55*	23*	.48*	.72*	.01
6. I'm afraid people important to me may find out that I'm not as capable as they think I am.	.75*	-.02	.35*	.78*	-.01	.42*	.81*	.00	-.08	.91	-.19	-.18
7. I tend to remember the incidents in which I have not done my best more than those times I have done my best.	.60*	-.12	.16	.75*	-.16*	.03	.65*	-.18*	-.02	.70*	.03	-.06

8. I rarely do a project or task as well as I'd like to do it.	.67*	.07	.27*	.68*	.08	.21*	.60*	.02	-.13	.65*	-.07	-.12
9. Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.	.72*	.48*	.01	.74*	.32*	-.02	.79*	.35*	-.10	.72*	.42*	-.02
10. It's hard for me to accept compliments or praise about my intelligence or accomplishments.	.72*	-.01	-.22*	.77*	.00	-.27*	.80*	.11	.41*	.64	.32	.36
11. At times, I feel my success has been due to some kind of luck.	.78*	.46*	-.00	.81*	.39*	-.08	.68*	.62*	-.01	.66*	.64*	-.02
12. I'm disappointed at times in my present accomplishments and think I should have accomplished much more.	.77*	.14*	.01	.75*	-.24*	.02	.74*	-.05	-.39*	.72	-.07	.30
13. Sometimes I'm afraid others will discover how much knowledge or ability I really lack.	.81*	.07	.29*	.85*	-.17*	.30*	.82*	.12	-.31*	.90*	-.12	.03
14. I'm often afraid that I may fail at a new assignment or undertaking even though I	.78*	-.12	.21*	.79*	-.27*	-.01	.77*	.01	-.19	.81*	-.04	.06

generally do well at what I attempt.												
15. When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.	.82*	.06	.01	.87*	-.05	-.08	.85*	.09	.01	.83*	-.01	-.17
16. If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.	.67	.02	-.52*	.69*	.03	-.38*	.78*	-.07	.46*	.55	.29	.44
17. I often compare my ability to those around me and think they may be more intelligent than I am.	.80*	-.30*	.08	.80	-.12	.02	.79*	-.25*	-.06	.71*	-.03	.29
18. I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.	.82*	-.37*	-.04	.80*	-.25*	-.21*	.83*	-.28*	.13	.74	-.03	.40
19. If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell	.58*	-.20*	-.22*	.54*	-.04	-.18	.58*	-.13	.21	.49	.09	.30

others until it is an accomplished fact.												
20. I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.	.66*	-.12	-.07	.57*	-.19	.01	.58*	-.11	.06	.55	-.06	.24

Note. F1 = Impostor phenomenon general factor, F2 = Factor 1, F3 = Factor 2.
*$p < .05$.

Table 12. Summary of Four Factor Exploratory Bi-factor Model Item Fit Over Time

	Wave 1				Wave 2				Wave 3				Wave 4			
Items	**F1**	**F2**	**F3**	**F4**	**F1**	**F2**	**F3**	**F4**	**F1**	**F2**	**F3**	**F4**	**F1**	**F2**	**F3**	**F4**
3. I avoid evaluations if possible and have a dread of others evaluating me.	.61*	.27	-.07	.05	.60*	.31*	.02	-.24*	.54*	-.05	.17	-.12	.45*	.01	-.36*	.04
4. When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.	.75	.44*	-.01	-.06	.72*	.36*	-.01	-.06	.78*	-.01	.24	-.02	.71*	.02	-.45	-.05
5. I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.	.59*	-.04	42*	.02	.61*	.30*	.49*	.01	.54*	.66*	.22	.05	.47*	.83*	.05	-.02

6. I'm afraid people important to me may find out that I'm not as capable as they think I am.	.76*	.11	-.01	-.29*	.79*	.10	-.01	-.38*	.81*	.01	-.02	.01	.89	-.06	-.06	-.33*
7. I tend to remember the incidents in which I have not done my best more than those times I have done my best.	.62*	.17	-.11	-.08	.76*	-.17*	-.01	-.03	.64*	.02	-.06	.39*	.69*	.08	-.04	-.12
8. I rarely do a project or task as well as I'd like to do it.	.67*	.21*	.04	-.03	.68*	-.14	.22*	-.25*	.60*	.09	-.13	.10	.64*	.02	-.01	-.23*
9. Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.	.68*	.06	.51*	-.13	.70*	-.14	.50*	-.02	.80*	.27*	-.03	-.28	.72*	.43*	-.05	-.00
10. It's hard for me to accept compliments or praise about my intelligence or accomplishments.	.69*	.29*	-.01	.42*	.76*	.01	.09	.29*	.77*	.13	.45*	-.04	.66*	.19*	.06	.36*

11. At times, I feel my success has been due to some kind of luck.	.75*	-.05	.54*	-.01	.77*	.05	.46*	.08	.67*	.61*	-.05	-.12	.66*	.58*	-.08	.08
12. I'm disappointed at times in my present accomplishments and think I should have accomplished much more.	.77	-.14*	.24	-.04	.77*	-.36*	-.03	-.03	.76*	-.03	-.35*	.07	.73*	.04	.43*	-.06
13. Sometimes I'm afraid others will discover how much knowledge or ability I really lack.	.82*	.06	.10	-.26*	.87*	-.01	-.11*	-.22*	.84*	.01	-.23	-.16	.89*	.00	.13*	-.20*
14. I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.	.80*	-.06	-.06	-.22*	.80*	-.02	-.21*	.05	.79*	-.09	-.12	-.10	.81*	-.04	.02	-.01

15. When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.	.80*	.21	.08	.09	.87*	.07	.00	.12	.86*	-.03	.53*	.02	.83*	-.08	-.26*	-.02
16. If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.	.63*	-.01	.11	.49*	.68*	.01	.11	.39*	.75*	-.04	.52*	.02	.60*	.02	-.05	.68*
17. I often compare my ability to those around me and think they may be more intelligent than I am.	.82*	-.06	-.23	-.06	.81*	-.06	-.03	-.00	.79*	-.10	-.06	.30*	.72*	-.02	.27*	.05

18. I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.	.85*	-.16	-.27	.04	.81*	-.10	-.13	.24*	.82*	-.18*	.78	.20*	.77*	-.12	.21	.25*
19. If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell others until it is an accomplished fact.	.59*	-.16	.01	.22*	.54*	-.17	-.09	.24*	.57*	.01	.19	.26*	.52*	-.03	.25*	-.03
20. I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.	.67*	-.11	-.04	.08	.59*	-.01	-.16	.02	.56*	.08	.01	.33*	.56*	-.03	.25*	.03

Note. F1 = Impostor phenomenon general factor; F2 = Factor 1; F3 = Factor 2; F4 = Factor 3.
*$p < .05$.

Table 13. Qualitative Interview Participant Demographics

Initials	Sex	Age	First Gen	Class Year	Major	College Attended	GPA	Impostor Mean
AC	Female	20	No	Junior	Political Science/Pre Medicine	UNC	3.0	4.80
CF	Female	21	Yes	Senior	Psychology	UNC	2.6	4.95
CW	Male	19	No	Sophomore	Computer Science	UNC	3.2	3.95
MT	Male	22	Yes	Senior	Comm/ Philosophy	UNC	3.1	3.80
IS	Female	22	No	Senior	Biology/Pre Medicine	North Carolina A&T	3.0	4.90
RC	Male	25	No	Senior	Biology	North Carolina A&T	2.5	2.95
KF	Female	19	No	Sophomore	Nursing	North Carolina Central	3.5	3.60
SB	Male	20	No	Junior	Criminal Justice	North Carolina Central	3.4	3.95

Note. GPA = grade point average; Comm= Communication.

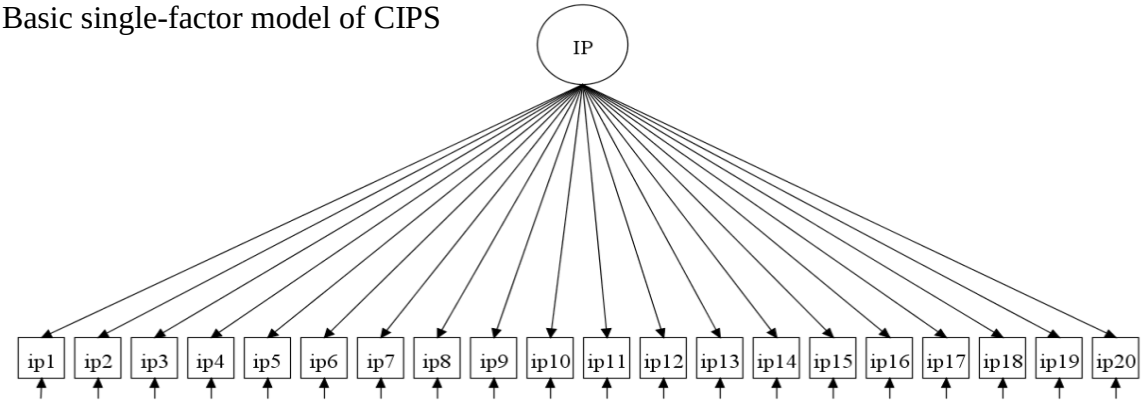
Table 14. Themes, Subthemes, and Focused Codes by Research Question

Overarching Theme/Research Question	
Subtheme	
"Focused Code"	
exemplar specific codes	Brief Definitions
Nature of Impostor Phenomenon	
"Dissonance"	Discrepancy between objective success and cognitions of intellectual incompetence
contradictory	
Meaning of Impostor Phenomenon	
"feeling Lucky"	Attributions of good fortune, luck, and/or random chance to make sense of success
by accident	
random	
general luck	
"Feeling Fraudulent"	Self-perceptions of fraudulence, incompetence, and inadequacy
inadequate	
undeserving	
figured out	
not qualified	
fraudulent	
"Discounting Ability"	Self-directed comments or cognitions that diminished one's own ability
minimize	
self-doubt	
just because	
upward comparison	
it was easy	
racial attributions	
Making Sense of Impostor Phenomenon	
"*One of the Only"*	Self-perceived sense of isolation, tokenism, and "otherness"
outlier	

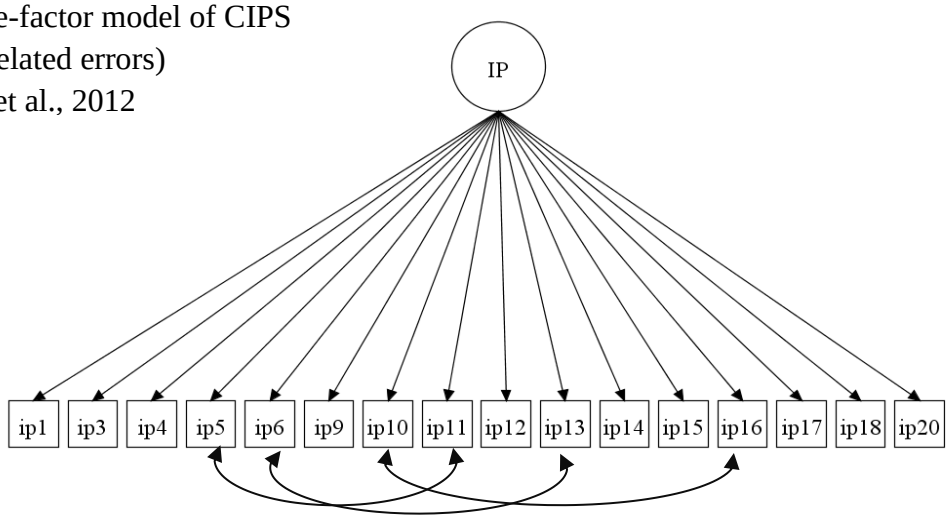
"The Looking Glass Effect"	Propensity for students to view themselves based on how they believe they are perceived by those around them
"Double Consciousness"	Pressures to represent the Black community, while also attempting to navigate the general college experience as an Black student
"High Expectations/Standards"	Self-imposed pressures to excel
Fear of reinforcing stereotypes	
Refuting stereotypes	
standards	
conscious of everything	
prove myself	

Figure 1. Competing Factor Structure Models of the Clance Impostor Scale

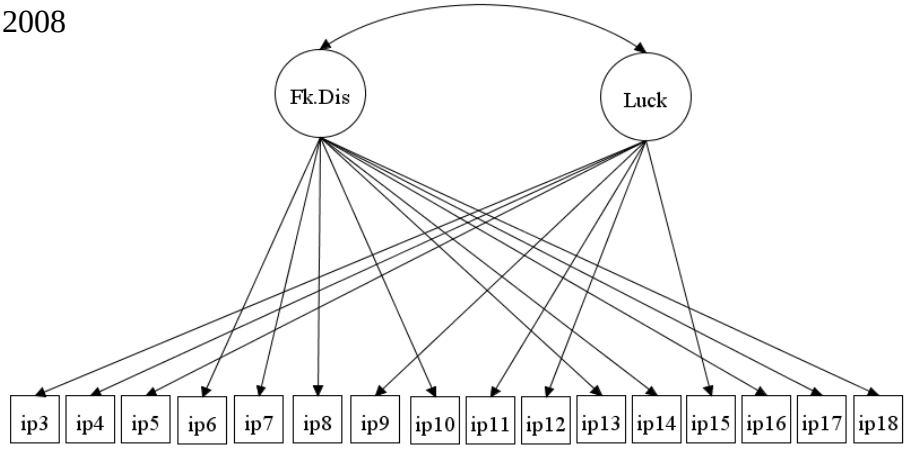
Basic single-factor model of CIPS



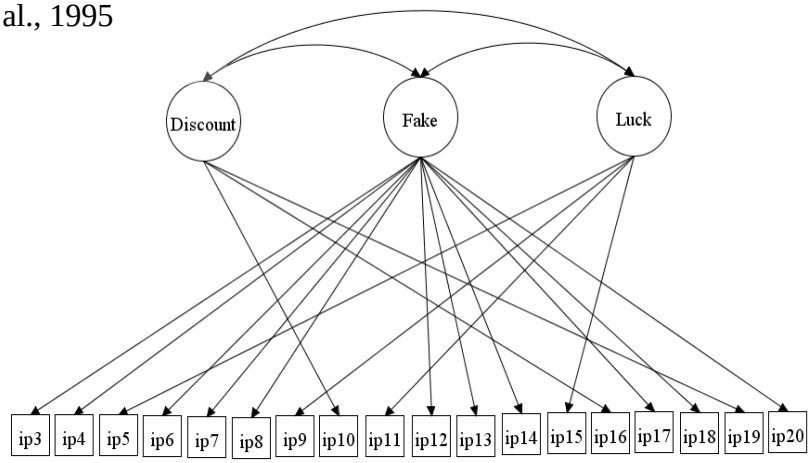
Single-factor model of CIPS
(Correlated errors)
Jöstl et al., 2012



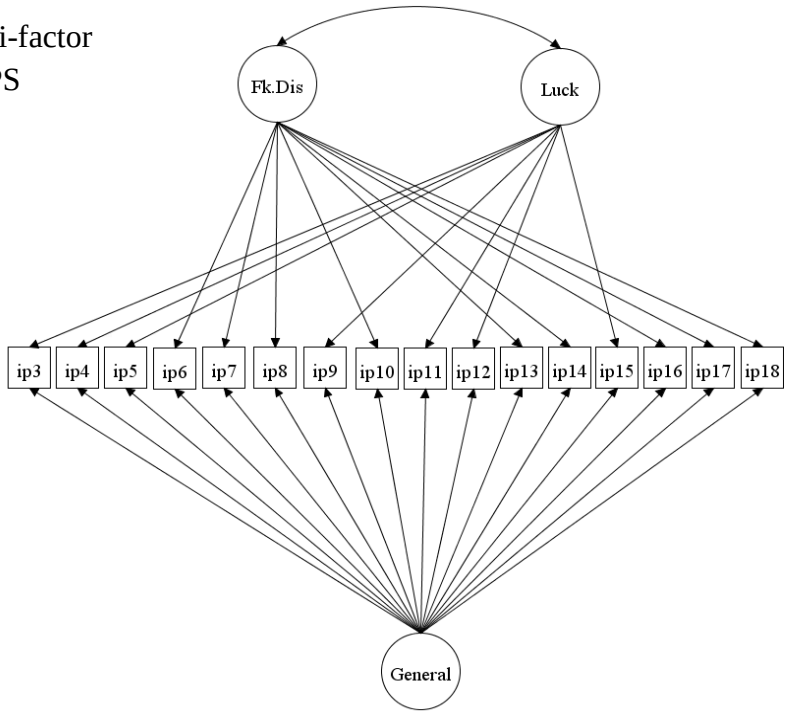
Two-factor model of CIPS
French et al., 2008



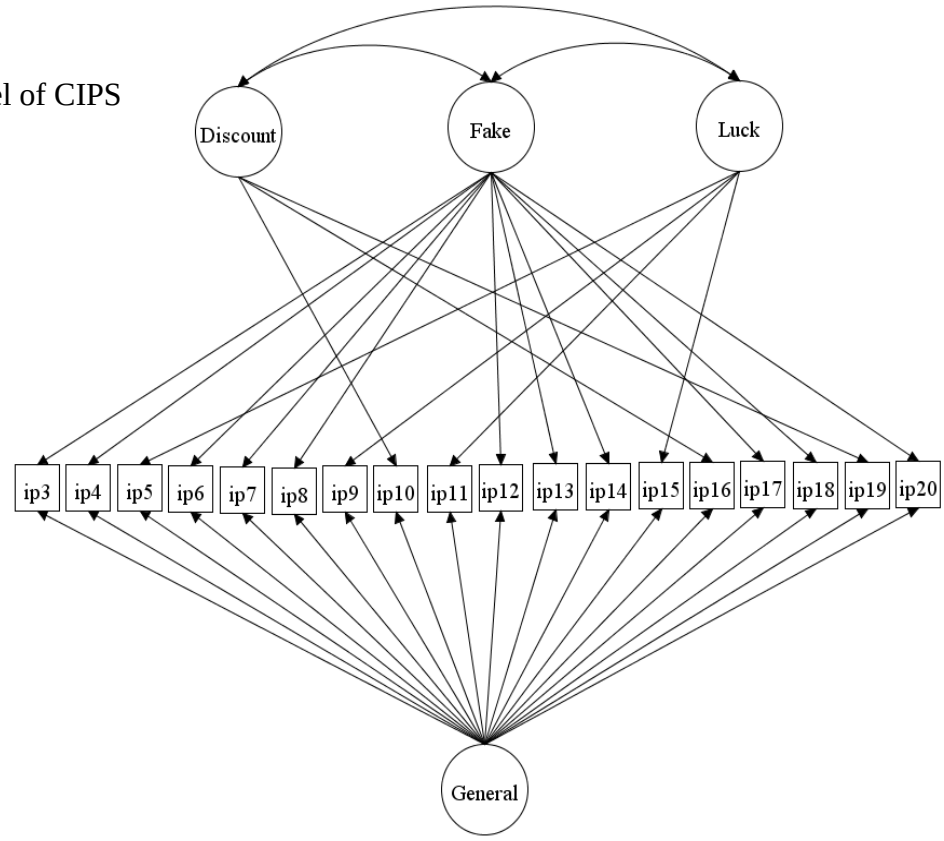
Three-factor model of CIPS
Chrisman et al., 1995



Two-factor bi-factor model of CIPS



Three-factor Bi-factor model of CIPS



Note: IP = Impostor Phenomenon, Fk.Dis = Fake.Discount.

APPENDIX A: INFORMED CONSENT AND QUANTITATIVE SURVEY QUESTIONNAIRES

The following questions are part of a data collection effort examining African American college students' life experiences on campus. Completing the questions is voluntary. If you do not want to answer any of the questions, you do not have to. However, your answers are very important to us, and if you choose to participate, this study will take about an hour to complete. The answers that you provide are confidential, and will only be used for research purposes.

Please work as quickly as you can, answering questions honestly, keeping in mind that all of the information you provide will be kept private. There are no right or wrong answers. There are many questions so do not spend too much time on any one question.

We think you will find the questions interesting and enjoy answering the questions. Thank you so much for your participation today. Without your cooperation, we would be unable to do our research.

I Consent □ **I do not consent and do not wish to participate □**

We'd like to begin by asking some basic questions about you and your background. Answer each question by marking one choice unless the instructions ask you to mark more than one answer. If you don't find an answer that fits exactly, choose the one that comes closest.

1. Are you…? (Gender)

Female □***1*** Male□***2*** Transgender: Female to Male□***3***
Male to Female□***4***

2. What is your date of birth?

____ (month)/ ____ (date)/ ____ (year)

3. What is your age?

_____Years old

4. What race do you consider yourself to be (mark <u>ALL</u> that apply)?

Black	□*1*
White/Caucasian/Anglo-Saxon	□*2*
American Indian or Alaska Native	□*3*
East or Southeast Asian	□*4*
Native Hawaiian or other Pacific Islander	□*5*
Other (specify below):	□*6*

5. How would you describe yourself? (Sexual Orientation)

Straight or heterosexual	□*1*
Bisexual	□*2*
Gay or Lesbian	□*3*
Unsure	□*4*
Other (specify):_____	□*5*

6. How would you describe your family's socioeconomic status?

Poor	□*1*
Working Class	□*2*
Middle Class	□*3*
Upper Middle	□*4*
Wealthy	□*5*

The next few questions ask about your religious or spiritual beliefs and how they may affect your daily life.

7. In general, how important are religious or spiritual beliefs in your day-to-day life?

Not at all important	□*1*
Not too important	□*2*
Fairly important	□*3*
Very important	□*4*

8. How often do you attend religious services?

Never	□*1*
Less than once a year	□*2*
About once or twice a year	□*3*
Several times a year	□*4*
About once a month	□*5*
2-3 times a month	□*6*
Nearly every week	□*7*
Every week	□*8*
Several times a week	□*9*

The next questions are about your prior and current educational experiences.

9. Are you a first generation college student?

Yes □*1* No□*2*

10. What is your class year?

First year	□*1*
Sophomore	□*2*
Junior	□*3*
Senior	□*4*

11. What was your <u>HIGH SCHOOL</u> grade point average (GPA)? (please check one)

____A	____B	____C
____A-	____B-	____C-
____B+	____C+	____D or F

12. What is your <u>CURRENT</u> cumulative grade point average (GPA)? _____

13. What is the name of the college university you are attending?

UNC-Chapel Hill	□*1*
NC-State	□*2*
North Carolina Central	□*4*
North Carolina A&T	□*5*

14. What is the racial composition of the college you are attending?

Almost all Black people	□*1*
More Black people than of other races	□*2*
Same number of Black and people of other races	□*3*
More people of other races than Black people	□*4*
Almost all people of other races	□*5*

15. What is your college major? _____ (Specify)

The next questions ask about experiences, thoughts, and feelings that some college students may experience at one time or another.

Clance's Imposter Scale (Clance & Imes, 1978; 20 items)

For each question, please circle the number that best indicates how true the statement is of you. It is best to give the first response that enters your mind rather than dwelling on each statement and thinking it over.

1. I have often succeeded on a test or task even though I was afraid that I would not do well before I undertook the task.

1 2 3 4 5
Not at all true V*ery true*

2. I can give the impression that I'm more competent than I really am.

1 2 3 4 5
Not at all true V*ery true*

3. I avoid evaluations if possible and have a dread of others evaluating me.

1 2 3 4 5
Not at all true V*ery true*

4. When people praise me for something I've accomplished, I'm afraid I won't be able to live up to their expectations of me in the future.

1 2 3 4 5
Not at all true V*ery true*

5. I sometimes think I obtained my present position or gained my present success because I happened to be in the right place at the right time or knew the right people.

1 2 3 4 5
Not at all true V*ery true*

6. I'm afraid people important to me may find out that I'm not as capable as they think I am.

1 2 3 4 5
Not at all true V*ery true*

7. I tend to remember the incidents in which I have not done my best more than those times I have done my best.

1 2 3 4 5
Not at all true V*ery true*

8. I rarely do a project or task as well as I'd like to do it.

1 2 3 4 5
Not at all true V*ery true*

9. Sometimes I feel or believe that my success in my life or in my job has been the result of some kind of error.

1 2 3 4 5
Not at all true V*ery true*

10. It's hard for me to accept compliments or praise about my intelligence or accomplishments.

1 2 3 4 5
Not at all true V*ery true*

11. At times, I feel my success has been due to some kind of luck.

1 2 3 4 5
Not at all true V*ery true*

12. I'm disappointed at times in my present accomplishments and think I should have accomplished much more.

1 2 3 4 5
Not at all true V*ery true*

13. Sometimes I'm afraid others will discover how much knowledge or ability I really lack.

1 2 3 4 5
Not at all true V*ery true*

14. I'm often afraid that I may fail at a new assignment or undertaking even though I generally do well at what I attempt.

1 2 3 4 5
Not at all true V*ery true*

15. When I've succeeded at something and received recognition for my accomplishments, I have doubts that I can keep repeating that success.

1 2 3 4 5
Not at all true V*ery true*

16. If I receive a great deal of praise and recognition for something I've accomplished, I tend to discount the importance of what I've done.

1 2 3 4 5
Not at all true V*ery true*

17. I often compare my ability to those around me and think they may be more intelligent than I am.

1 2 3 4 5
Not at all true V*ery true*

18. I often worry about not succeeding with a project or examination, even though others around me have considerable confidence that I will do well.

1 2 3 4 5
Not at all true V*ery true*

19. If I'm going to receive a promotion or gain recognition of some kind, I hesitate to tell others until it is an accomplished fact.

1 2 3 4 5
Not at all true V*ery true*

20. I feel bad and discouraged if I'm not "the best" or at least "very special" in situations that involve achievement.

1	2	3	4	5
Not at all true				V*ery true*

John Henryism Scale for Active Coping (James et al., 1983; 12 items)

The questions below concern how you see yourself. Read each question carefully and then indicate the response which best describes how you feel for each question. Each person is different, so there are no right or wrong answers. We want an honest statement of how you generally see yourself.

1. **I've always felt that I could make of my life pretty much what I wanted to make of it.**
   1 2 3 4 5
   Completely False *Completely True*

2. **Once I make up my mind to do something, I stay with it until the job is completely done.**
   1 2 3 4 5
   Completely False *Completely True*

3. **I like doing things that other people thought could not be done.**
   1 2 3 4 5
   Completely False *Completely True*

4. **When things don't go the way I want them to, that makes me work even harder.**
   1 2 3 4 5
   Completely False *Completely True*

5. **Sometimes I feel if anything is going to be done right, I have to do it myself.**
   1 2 3 4 5
   Completely False *Completely True*

6. **It's not always easy, but I manage to find a way to do the things I really need to get done.**
   1 2 3 4 5
   Completely False *Completely True*

7. **Very seldom have I been disappointed with the results of my work.**
   1 2 3 4 5
   Completely False *Completely True*

8. **I feel that I am the kind of individual who stands up for what she believes in, regardless of the consequences.**
   1 2 3 4 5
   Completely False *Completely True*

9. **In the past, even when things got really tough, I never lost sight of my goals.**
   1 2 3 4 5
   Completely False *Completely True*

10. **It's important for me to be able to do things in the way I want to do them rather than the way other people want me to do them.**
    1 2 3 4 5
    Completely False *Completely True*

11. I don’t let my personal feelings get in the way of doing a job.

1	2	3	4	5
Completely False				*Completely True*

12. Hard work has helped me get ahead in life.

1	2	3	4	5
Completely False				*Completely True*

The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998; 20 items)

For each question, please circle a number to indicate the degree to which you feel the statement is characteristic or true for you.

1. I get nervous if I have to speak to someone in authority (teacher, boss).

1 2 3 4 5

Not at All *Extremely*

2. I have difficulty making eye contact with others.

1 2 3 4 5

Not at All *Extremely*

3. I become tense if I have to talk about myself or my feelings.

1 2 3 4 5

Not at All *Extremely*

4. I find it difficult mixing comfortably with the people I work with.

1 2 3 4 5

Not at All *Extremely*

5. I find it easy to make friends of my own age.

1 2 3 4 5

Not at All *Extremely*

6. I tense up if I meet an acquaintance in the street.

1 2 3 4 5

Not at All *Extremely*

7. When mixing socially, I am uncomfortable.

1 2 3 4 5

Not at All *Extremely*

8. I feel tense if I am along with just one person.

1 2 3 4 5

Not at All *Extremely*

9. I am at ease meeting people at parties, etc.

1 2 3 4 5

Not at All *Extremely*

10. I have difficulty talking with other people.

1 2 3 4 5

Not at All *Extremely*

11. I find it easy to think of things to talk about.

1 2 3 4 5

Not at All *Extremely*

12. I worry about expressing myself in case I appear awkward.

1 2 3 4 5

Not at All *Extremely*

13. I find it difficult to disagree with another's point of view.

1 2 3 4 5

Not at All *Extremely*

14. I have difficulty talking to attractive persons of the opposite sex.

1 2 3 4 5

Not at All *Extremely*

15. I find myself worrying that I won't know what to say in social situations.

1 2 3 4 5

Not at All *Extremely*

16. I am nervous mixing with people I don't know well.

1 2 3 4 5

Not at All *Extremely*

17. I feel I'll say something embarrassing when talking.

1 2 3 4 5

Not at All *Extremely*

18. When mixing in a group I find myself worrying I will be ignored.

1 2 3 4 5

Not at All *Extremely*

19. I am tense mixing in a group.

1 2 3 4 5

Not at All *Extremely*

20. I am unsure whether to greet someone I know only slightly.

1 2 3 4 5

Not at All *Extremely*

Rosenberg Self-esteem Scale (Rosenberg, 1965; 10 items)

Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

1. On the whole, I am satisfied with myself.

1	2	3	4
Strongly Disagree			*Strongly Agree*

2. At times I think I am no good at all. (R)

1	2	3	4
Strongly Disagree			*Strongly Agree*

3. I feel that I have a number of good qualities.

1	2	3	4
Strongly Disagree			*Strongly Agree*

4. I am able to do things as well as most other people.

1	2	3	4
Strongly Disagree			*Strongly Agree*

5. I feel I do not have much to be proud of. (R)

1	2	3	4
Strongly Disagree			*Strongly Agree*

6. I certainly feel useless at times. (R)

1	2	3	4
Strongly Disagree			*Strongly Agree*

7. I feel that I'm a person of worth, at least on an equal plane with others.

1	2	3	4
Strongly Disagree			*Strongly Agree*

8. I wish I could have more respect for myself. (R)

1	2	3	4
Strongly Disagree			*Strongly Agree*

9. All in all, I am inclined to feel that I am a failure. (R)

1	2	3	4
Strongly Disagree			*Strongly Agree*

10. I take a positive attitude toward myself.

1	2	3	4
Strongly Disagree			*Strongly Agree*

Achievement Motivation Scale-Revised (AMS; Lang & Fries, 2006; 10 items)

Please carefully read the following statements and select the button that corresponds to your level of agreement with the statement. Please answer every statement, even if you are not completely sure of your response.

1. I like situations in which I can find out how capable I am.

1 2 3 4

Strongly Disagree *Strongly Agree*

2. When I am confronted with a problem, which I can possibly solve, I am enticed to start working on it immediately.

1 2 3 4

Strongly Disagree *Strongly Agree*

3. I enjoy situations in which I can make use of my abilities.

1 2 3 4

Strongly Disagree *Strongly Agree*

4. Situations that allow me to test me abilities appeal to me.

1 2 3 4

Strongly Disagree *Strongly Agree*

5. I am attracted to tasks in which I can test my abilities.

1 2 3 4

Strongly Disagree *Strongly Agree*

6. I am afraid of failing in somewhat difficult situations when a lot depends on me.

1 2 3 4

Strongly Disagree *Strongly Agree*

7. I feel uneasy doing something if I am not sure of succeeding.

1 2 3 4

Strongly Disagree *Strongly Agree*

8. I am afraid of tasks, which I am not able to solve, even if nobody would notice my failure.

1 2 3 4

Strongly Disagree *Strongly Agree*

9. I feel quite anxious in new situations, even if nobody is watching.

1 2 3 4

Strongly Disagree *Strongly Agree*

10. If I don’t understand a problem immediately, I start feeling anxious.

1	2	3	4
Strongly Disagree			*Strongly Agree*

Frost Multidimensional Perfectionism Scale (Frost et al., 1990; 35 items)

For each question below, please circle the answer that best indicates how much you agree or disagree with the statement.

1. My parents set very high standards for me.

1 2 3 4 5

Strongly Disagree *Strongly Agree*

2. Organization is very important to me.

1 2 3 4 5

Strongly Disagree *Strongly Agree*

3. As a child, I was punished for doing things less than perfect.

1 2 3 4 5

Strongly Disagree *Strongly Agree*

4. If I do not set the highest standards for myself, I am likely to end up as a second-rate person.

1 2 3 4 5

Strongly Disagree *Strongly Agree*

5. My parents never tried to understand my mistakes.

1 2 3 4 5

Strongly Disagree *Strongly Agree*

6. It is important to me that I be thoroughly competent in everything I do.

1 2 3 4 5

Strongly Disagree *Strongly Agree*

7. I am a neat person.

1 2 3 4 5

Strongly Disagree *Strongly Agree*

8. I try to be an organized person.

1 2 3 4 5

Strongly Disagree *Strongly Agree*

9. If I fail at work/school, I am a failure as a person.

1 2 3 4 5

Strongly Disagree *Strongly Agree*

10. I should be upset if I make a mistake.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

11. My parents wanted me to be the best at everything.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

12. I set higher goals than most people.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

13. If someone does a task at work/school better than I, then I feel like I failed the whole task.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

14. If I fail partly, it is as bad as being a complete failure.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

15. Only outstanding performance is good enough in my family.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

16. I am very good at focusing my efforts on attaining a goal.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

17. Even when I do something very carefully, I often feel that it is not quite right.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

18. I hate being less than the best at things.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

19. I have extremely high goals.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

20. My parents have expected excellence from me.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

21. People will probably think less of me if I make a mistake.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

22. I never felt like I could meet my parents' expectations.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

23. If I do not do as well as other people, it means I am an inferior human being.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

24. Other people seem to accept lower standards from themselves than I do.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

25. If I do not do well all the time, people will not respect me.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

26. My parents have always had higher expectations for my future than I have.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

27. I try to be a neat person.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

28. I usually have doubts about the simple everyday things I do.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

29. Neatness is very important to me.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

30. I expect higher performances in my daily tasks than most people.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

31. I am an organized person.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

32. I tend to get behind in my work because I repeat things over and over.

1	*2*	*3*	*4*	*5*
Strongly Disagree				*Strongly Agree*

33. It takes me a long time to do something "right".

1	*2*	*3*	*4*	*5*
Strongly Disagree				*Strongly Agree*

34. The fewer mistakes I make, the more people will like me.

1	*2*	*3*	*4*	*5*
Strongly Disagree				*Strongly Agree*

35. I never felt like I could meet my parents' standards.

1	*2*	*3*	*4*	*5*
Strongly Disagree				*Strongly Agree*

Multidimensional-Multiattributional Causality Scale (MMCS) (Lefcourt, 1981; 24 items)

For each question below, please circle the answer that best indicates how much you agree or disagree with the statement.

1. **When I receive a poor grade, I usually feel that the main reason is that I haven't studied enough for that course.**

   1 2 3 4 5

   Strongly Disagree Strongly Agree

2. **If I were to receive low marks it would cause me to question my academic ability.**

   1 2 3 4 5

   Strongly Disagree Strongly Agree

3. **Some of the times that I have gotten a good grade in a course, it was due to the teacher's easy grading scheme.**

   1 2 3 4 5

   Strongly Disagree Strongly Agree

4. **Sometimes my success on exams depends on some luck.**

   1 2 3 4 5

   Strongly Disagree Strongly Agree

5. **In my case, the good grades I receive are always the direct result of my efforts.**

   1 2 3 4 5

   Strongly Disagree Strongly Agree

6. **The most important ingredient in getting good grades is my academic ability.**

   1 2 3 4 5

   Strongly Disagree Strongly Agree

7. **In my experience, once a professor gets the idea you're a poor student, your work is much more likely to receive poor grades than if someone else handed it in.**

   1 2 3 4 5

   Strongly Disagree Strongly Agree

8. **Some of my lower grades have seemed to be partially due to bad breaks.**

   1 2 3 4 5

   Strongly Disagree Strongly Agree

9. **When I fail to do as well as expected in school, it is often due to a lack of effort on my part.**

   1 2 3 4 5

   Strongly Disagree Strongly Agree

10. If I were to fail a course it would probably because I lacked skill in that area.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

11. Some of my good grades may simply reflect that there were easier courses than most

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

12. I feel that some of my good grades depend to a considerable extent on chance factors such as having the right questions on exams.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

13. Whenever I receive good grades, it is always because I have studied hard for that course.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

14. I feel that my good grades reflect directly on my academic ability.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

15. Often my poorer grades are obtained in courses that the professor has failed to make interesting.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

16. My academic low points sometimes make me think I was just unlucky.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

17. Poor grades inform me that I haven't worked hard enough.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

18. If I were to get poor grades I would assume that I lacked ability to succeed in those courses.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

19. Sometimes I get good grades only because the course material was easy to learn.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

20. Sometimes I feel that I have to consider myself lucky for the good grades I get.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

21. I can overcome all obstacles in the path of academic success if I work hard enough.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

22. When I get good grades it is because of my academic competence.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

23. My academic low points sometimes make me think I was just unlucky.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

24. Some of my bad grades may have been a function of bad luck, being in the wrong course at the wrong time.

1 *2* *3* *4* *5*

Strongly Disagree *Strongly Agree*

Brief Fear of Negative Evaluation Scale (Carleton, Collimore, & Asmundson, 2007; 12 items)

Please read each item carefully and then indicate how well each statement describes you. Use the 1-5 response scale for your answers. Answer each item as honestly and accurately as possible. Response scale: For each item, please choose the number that best indicate how well the item characterizes you.

1. I worry about what other people will think of me even when I know it doesn't make any difference.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

2. It bothers me when I know people are forming an unfavorable impression of me.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

3. I am frequently afraid of other people noticing my shortcomings.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

4. I worry about what kind of impression I am making on someone.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

5. I am afraid that others will not approve of me.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

6. I am afraid that people will find fault with me.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

7. I am concerned about others people's opinions of me.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

8. When I am talking to someone, I worry about what they may be thinking about me.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

9. I am usually worried about what kind of impression I make.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

10. If I know someone is judging me, it tends to bother me.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

11. Sometimes I think I am too concerned with what other people think of me.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

12. I often worry that I will say or do the wrong things.

1 *2* *3* *4* *5*

Not at all characteristic of me *Extremely characteristic of me*

The Minority Status Stress Scale (MSSS; Smedley, Myers, & Harrell, 1993; 37 items)

Instructions. Below is a list of statements that describe situation that may be stressful for some students. We would like to know how stressful these situations have been for you since you have been in college. By stressful" we mean that it bothers you or causes you problems in any way. Please circle the response that best indicates how stressful each situation has been for you since you have been at your university. Circle "N/A if you DO NOT EXPERIENCE THE SITUATION AT ALL. Circle "1" if you DO experience or recognize the situation but YOU DO NOT EXPERIENCE IT AS STRESSFUL AT ALL. (0-5 rating scale)

1. **My family does not understand the pressures of college (e.g. amount of time or quiet needed to study).**
   0 1 2 3 4 5
   Does not apply *Extremely Stressful*

2. **My family discourages me from spending my time going to college**
   0 1 2 3 4 5
   Does not apply *Extremely Stressful*

3. **Being the first in my family to attend a major university.**
   0 1 2 3 4 5
   Does not apply *Extremely Stressful*

4. **Doubts about my ability to succeed in college.**
   0 1 2 3 4 5
   Does not apply *Extremely Stressful*

5. **My academic background preparation for college being inadequate.**
   0 1 2 3 4 5
   Does not apply *Extremely Stressful*

6. **White people expecting me to be a certain way because of my race (i.e. stereotyping).**
   0 1 2 3 4 5
   Does not apply *Extremely Stressful*

7. **Language-related problems (i.e., having an "accent" or "speaking non-standard English").**
   0 1 2 3 4 5
   Does not apply *Extremely Stressful*

8. **Maintaining my ethnic identity while attending the university.**
   0 1 2 3 4 5
   Does not apply *Extremely Stressful*

9. **The lack of unity/supportiveness among members of my race at the university.**
   0 1 2 3 4 5

Does not apply *Extremely Stressful*

10. Being treated rudely or unfairly because of my race.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

11. Being discriminated against.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

12. Others lacking respect for people of my race.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

13. Negative Attitudes/treatment of faculty toward students of my race.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

14. Having to "prove" my abilities to others (i.e. working twice as hard).

0 1 2 3 4 5

Does not apply *Extremely Stressful*

15. Pressures to show loyalty to my race (e.g. giving back to my ethnic group community).

0 1 2 3 4 5

Does not apply *Extremely Stressful*

16. White students and faculty expect poor academic performance from students of my race.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

17. Pressures from people of my same race (e.g. how to act, what to believe).

0 1 2 3 4 5

Does not apply *Extremely Stressful*

18. People close to me thinking I'm acting "White."

0 1 2 3 4 5

Does not apply *Extremely Stressful*

19. Feeling others do not respect my intelligence.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

20. Difficulties with having White friends.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

21. Negative relationships between different ethnic groups at my university.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

22. Having to always be aware of what White people might do.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

23. The White-oriented campus culture at my university.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

24. Wealthy campus culture at my university.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

25. The university is an unfriendly place.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

26. Having to live around mostly White people.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

27. Tense relationships between Whites and minorities at the university.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

28. Few courses involve issues relevant to my ethnic group.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

29. Racist policies and practices of the university.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

30. My university lacks concern and support for the needs of students of my race.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

31. The university does not have enough professors of my race.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

32. Few students of my race are in my classes.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

33. Seeing members of my race doing low status jobs and Whites in high status jobs on campus.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

34. My family having very expectations for my college success.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

35. Pressure that what "I" do is representative of my ethnic group's abilities, behavior, and so on.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

36. Feeling less intelligent or less capable than others.

0 1 2 3 4 5

Does not apply *Extremely Stressful*

37. Relationships between males and females of my race (e.g. lack of available dating partners)

0 1 2 3 4 5

Does not apply *Extremely Stressful*

Debriefing Following Completion of Survey

Thank you for participating! If you have further questions about the study, please contact Donte Bernard at dlb36@unc.edu.

To receive payment for your participation in this study please respond "yes" to the question below. In doing so, you will be redirected to a separate survey where your contact information for electronic payment will be collected. **Your responses on this survey <u>will not</u> be linked to your contact information.** There will also be an opportunity to indicate your interest in participating in a separate, yet related, follow up study, in which students will be asked to speak about specific aspects of their experiences as a Black college students on university campuses. You will be compensated an additional $25 for your time.

Do you wish to receive incentive for participating in this study?

Yes □***1 → if yes, participants will be redirected to a separate survey where they will indicate an email address where payment will be sent to.***

No□***2***

Would you be interested in being contacted to participate in a follow up interview? This interview is part of a study to determine how Black Students discuss thoughts and feelings related to perceptions of their own abilities. This study **<u>will not</u>** be related to your responses on the previous survey. Participation would require a one-time interview with a graduate student to talk about this topic for 45-60 minutes. This audio recorded session will be confidential. You will receive $25 cash for your time.

Yes, I agree to be contacted □***1***

No, I do not want to be contacted □***2***

APPENDIX B: QUALITATIVE DEMOGRAPHIC FORM

1. Are you…? (Gender)

Female □*1* Male□*2* Transgender: Female to Male□*3* Male to Female□*4*

2. What is your age?

_____Years old

3. What race do you consider yourself to be (mark ALL that apply)?

Black	□*1*
White/Caucasian/Anglo-Saxon	□*2*
American Indian or Alaska Native	□*3*
East or Southeast Asian	□*4*
Native Hawaiian or other Pacific Islander	□*5*
Other (specify): _____	□*6*

4. How would you describe yourself? (Sexual Orientation)

Straight or heterosexual	□*1*
Bisexual	□*2*
Gay or Lesbian	□*3*
Unsure	□*4*
Other (specify):_____	□*5*

5. How would you describe your family's socioeconomic status?

Poor	□*1*
Working Class	□*2*
Middle Class	□*3*
Upper Middle	□*4*
Wealthy	□*5*

6. Are you a first generation college student?

Yes □*1* No□*2*

7. What is your class year and major? **Major:**

_____

First year	□*1*
Sophomore	□*2*
Junior	□*3*
Senior	□*4*

8. What was your HIGH SCHOOL grade point average (GPA)? (please check one)

____A	____B	____C
____A-	____B-	____C-
____B+	____C+	____D or F

9. What is your CURRENT cumulative grade point average (GPA)? _____

10. What is the name of the college university you are attending?

UNC-Chapel Hill	□*1*
NC-State	□*2*
North Carolina Central	□*4*
North Carolina A&T	□*5*

APPENDIX C: IMPOSTOR PHENOMENON INTERVIEW GUIDE

I want to thank you for taking the time to meet with me today. My name is _____ and I would like to talk to you about some of the unique experiences that Black students may navigate within the college context. Specifically, I am interested in gaining an idea of how Black students make sense of their accomplishments and the factors that may influence how they perceive their own intellectual ability.

As such, this interview is a chance for you to really talk in detail about some of your unique academic or intellectual accomplishments in college, and any thoughts, feelings, and/or experiences that may influence how valid you perceive these achievements to be.

The interview should take less than an hour. I will be audiotaping the session because I don't want to miss any of your comments. Although I will be taking some notes during the session, I can't possibly write fast enough to get it all down. Therefore, I ask that you speak up so that I can catch everything we are talking about today.

So, just a few points of emphasis before we begin. First, I will be asking a number of questions, but feel free to also offer up other points that my questions may not directly address. Second, I want to stress that there are no right or wrong answers to these questions and I encourage you to speak openly and honestly. This may also mean letting me know if the questions I asked do not make sense or do not apply to you. Third, you are not required to answer any questions that you do not feel comfortable responding to, and may withdrawal at any time without penalty. Finally, this interview is expected to last less than 1 hour, but I am happy to talk with you for whatever length of time is convenient (shorter or longer) even if we have to spread this interview over multiple sessions. Before we begin, do you have any questions for me?

I Consent □ **I do not consent and do wish to participate □**

Section I: General Warm Up Discussions

1. Can you describe what has led you to pursue a college degree?
    a. Can you tell me more about that?
        i. What happened before/after?
        ii. Who else was involved
    b. What else was involved in your decision?

2. What are some accomplishments you've had related to your _____? (something related to academic journey)
    a. Can you tell me more/walk me through one specific success of yours?

3. How did you feel about these things?
    a. What was going through your mind after _____ happened?
        i. Could you tell me more?

4. When you're successful or after an accomplishment, do you ever feel undeserving?
    a. If so, what are things that go through your mind?
    b. What makes that feeling most salient?
    c. Can you give me an example?

5. Has anything ever made you question the legitimacy of an accomplishment?
    a. Yes→ can you tell me more about this?
    b. Are there other factors that contribute to this experience?

I appreciate your responses. I'd now like to pause for a moment as we read over a brief passage that may relate to some of the experiences you have as a student on campus. Afterwards, I'd like to have a discussion about the passage and the extent to which you find it applicable to your own experiences as a student.

****

Section II: **Impostor Introduction Passage Discussion**

6. What thoughts did you have about Marcus while you were reading the passage?
    a. In your own words, can you paraphrase what you read about Marcus?

7. In general, what, if anything, do you think would cause someone to experience that?
    a. Could you tell me more?

8. Research sometimes refers to what Marcus is experiencing as the impostor phenomenon or impostor syndrome, is this something that you are familiar with?
    a. If yes →What are your thoughts about this/can you tell me your understanding of this term?
    b. No, worries, let's move on→ Q.9

I appreciate your responses. Let's now move to the next section of the interview and discuss impostor phenomenon in the context of your own experiences.

Section III: Impostor Discussion Related to Own Experiences

9. Now that we've read and talked a little about Marcus, I am wondering if his feelings and experiences resonate with any of your own?
    a. If yes, can you talk about this falls in line with your own experiences?
    b. No—ask 11b

10. When did you first notice this experience?
    a. Can you tell me more about that?
    b. Would you say this was more of a sudden onset or of a continuous process?
        i. Could you tell me more?
        ii. What makes this most salient?
        iii. What makes this least salient?

11. Are there ways in which his experiences differ from your own?
    a. If yes, how so?
        i. Are their specific aspects that differ?
    b. Do you know anyone like Marcus?

12. Do you think that specific instances of success or accomplishments had anything to do with luck?
    a. When you are successful, do you think you tend to discount your own ability?
    b. When you are successful, do you every feel like you are a fraud?
    c. In your opinion, do you see these factors playing off of one another?
        i. If yes, how so?

13. What if anything do you think caused you to feel that way?
    a. Do you think your environment was involved?
    b. Do you think race was involved?
    c. Do you think any individual characteristics were involved?
        i. Can you tell me more about that?

<u>Concluding Remarks</u>

We have talked a lot about your experiences today, do you have anything else to add?

Are there any questions you have for me?

I want to thank you so much for your time today. Your responses have been invaluable.

APPENDIX D: QUALITATIVE VIGNETTES

Vignette A

Marcus is attending school at a large predominately White institution. He is a high achieving student who receives mostly A's and B's in class, and who has also been recognized for his academic achievement.

Despite the fact that he has successfully passed difficult courses and even received a few local awards for his academic accomplishments, Marcus often doubts his abilities as a student and soon to be young professional. In his mind, he has gotten lucky on a few key exams, and has occasionally been able to produce work that he is proud of. For the most part, he believes that he lacks the required talent to be successful and that he produces inconsistent work. He often views his peers as being considerably more talented than he is, and is pretty sure they see him as being less talented, despite the occasional compliments he receives from them and others.

As a result, Marcus sometimes thinks of himself as being something of a "fraud" and feels as though he has faked or tricked others into thinking he is a successful college student. He often worries that his peers or professors will one day discover his lack of academic ability.

Vignette B

Marcus is attending school at a Historically Black College/University. He is a high achieving student who receives mostly A's and B's in class, and who has also been recognized for his academic achievement.

Despite the fact that he has successfully passed difficult courses and even received a few local awards for his academic accomplishments, Marcus often doubts his abilities as a student and soon to be young professional. In his mind, he has gotten lucky on a few key exams, and has occasionally been able to produce work that he is proud of. For the most part, he believes that he lacks the required talent to be successful and that he produces inconsistent work. He often views his peers as being considerably more talented than he is, and is pretty sure they see him as being less talented, despite the occasional compliments he receives from them and others.

As a result, Marcus sometimes thinks of himself as being something of a "fraud" and feels as though he has faked or tricked others into thinking he is a successful college student. He often worries that his peers or professors will one day discover his lack of academic ability.

APPENDIX E: SAMPLE TRANSCRIPT TEMPLATE

Interviewer: DB: All right. What thoughts did you have about Marcus while you were reading this passage?

[00:13:00]

Interviewee: KF: I actually related to Marcus a bit.

Interviewer: DB: In what ways?

Interviewee: KF: The way that I was ... I'm mostly a student who receives A's and B's. I have been recognized for my accomplishments. I do doubt my abilities sometimes and I do feel that I have gotten lucky on a few exams, such as the chemistry one. I do sometimes feel that I may not be prepared for my career. I do feel ... I definitely feel that my peers are more talented than I

[00:13:30] am at times.

Interviewer: DB: That's ... In your own words, what do you think it is that makes you feel this way?

[00:14:00]

Interviewee: KF: I really don't know. I'm not sure ... Because I know that as I was a child, I always got good grades and stuff. I just feel like it's a part of me to just do well in school, but you know, sometimes when I see other people failing,

[00:14:30] I'm like ... I don't know is it too easy for me or something? Then some of my peers, they are ... I believe they are smarter than me sometimes. Like when I see they have internships and everything and hold high levels of leadership.

APPENDIX F: SAMPLE MEMO

This interview was with IS, a senior attending an HBCU in North Carolina. In the interview there were a number of themes that arose including not feeling qualified or deserving of her accomplishments and success, the need to disprove negative stereotypes, and general feelings of inadequacy when compared to people who are comparably talented.

IS is a high achieving students with aspirations of becoming a doctor. However, throughout the interview, she repeatedly expressed concerns that her university may not have prepared her as much as she initially thought. It appears that several factors play into this concern. First, Imani notes that she has experienced actual times of self-perceived failure (i.e., bad test performance) which she perceived as evidence that she may not be as prepared or skilled as other people outside of her university both at other HBCUs and PWIs. I coded this theme as "little fish in big pond" as it resonated with a previous interview in which experiences outside of the context in which they felt comfortable generated concerns of confidence and competence, despite evidence of their high achieving ability. Similarly, she has received many negative messages related to her education that appear to downplay or minimize her GPA and academic accomplishments. As such, she often compares herself to "national metrics" which makes her feel as though she is "not prepared" to make it in the real world. Thus, she expresses concerns that people falsely compliment her work, with the knowledge that she is not as skilled, and that she will eventually be "figured out". Therefore, in situations in which she is actually successful, she explains feeling as though she "lucked up" because it was inconsistent with her actual beliefs.

Interestingly, IS has had several negative, race-related experiences that have appear to factor into these feelings. She describes having instances in elementary school where her ability is doubted, times during internships where her ability is downplayed and attributed to external factors, and training experiences that were cut short as individuals did not perceive her to be as skilled as she actually is. As such, she imposes high expectations on herself to "disprove" a lot of the negative minority related/stereotypes beliefs that she believes others may hold about her and Black people in general. This is a difficult endeavor however, as she that she sometimes "internalizes" negative messages that she has received that may minimize her intellect and accomplishments. Such feelings are particularly relevant in situations in which her race is made salient (e.g., being the only person of color in evaluative situations). Relatedly, gender and the awareness of gender stereotypes was also reported to be an additional factor that contributed to IP experiences, particularly in situations where she was one of the only.

What is notable here, is that it she seems to be endorsing all the symptoms of IP (i.e., feeling fraudulent, lucky, and discounting ability), but in a slightly different way. It seems as though IP may stem from external messages that counter one's own initial beliefs. Similar to AC, Imani is aware of her achievements and has confidence in her abilities, but it is the prevalence of race-related stressors that may actually cause her to endorse feelings of intellectual incompetence. Said differently, despite evidence of objective success, feelings of IP may stem from external messages that have been internalized to compromise feelings of intellectual incompetence.
A powerful quote that may also fall in line with the socialization piece that may factor into the high expectations: "study like your life depends on it, because it does".

Appendix F continued

Sample Memo

This interview was conducted with AC, a junior female college student attending a PWI. She described her experiences as a college student and her experiences with symptoms of "impostor syndrome," broadly speaking. Several themes emerged throughout the interview. AC spoke frequently about feeling surprised at her accomplishments, such as surprise at being accepted into the university she currently attends and frequent feelings of surprise when she performs well on tests in class. She recalls often thinking that there was an element of luck to her accomplishments, and when it comes to tests, she often thinks that she did well because "it was easy." These feelings are exacerbated when she does not feel she studied as much as she should have (so rather than attributing it to intelligence or skill, she got lucky and it was easy). However, she also frequently discusses a back-and-forth dialogue with herself, where she combats these thoughts and fights to acknowledge that she has worked hard for her grades and other accomplishments. Along with the more typical or classic symptoms of imposter syndrome (luck, discounting, fraudulence) she frequently discussed her experience being a person of color (and a woman of color more specifically). As it relates to imposter syndrome, she notes that her self-discounting often occurs more when she is confronted with her minority status (e.g., is around many individuals who are not of color) and begins thinking about how other people might be perceiving her. She describes engaging in self-monitoring because she does not want to confirm general stereotypes. However, she again describes a back-and-forth dialogue with herself during which she fights against these thoughts and tries to accept that she cannot live her life in fear of what others are thinking. She reaffirms her identity as an individual and not a representative of her whole group. It seems that she has made great use of her "sister talk" group and her close friends of color-her discussions with others from these groups have contributed to her being able to identify, understand, and fight back against her negative thoughts.

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